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RUBBER FOR INDUSTRY

Behind the Scenes...

Happy New Year!

Well, with this issue we're wrapping up another year. It's been a very notable one for us, with a long list of editorial achievements behind us. The thousands of letters we've received from you readers have piled a large measure of praise on the desks of our editorial staff, which will certainly spur them on to even greater efforts during 1949. Looking backward, we are perhaps a little inclined to point out the special report jobs, including the ones on scrap, on steel prices, on tool steels and on the industry's new steel production statistics. We're prone to look at these and forget the bread-and-butter jobs which provide week-in and week-out coverage of the things you folks need to know. These jobs will be continued in 1949, so as to give you complete coverage of the important news developments, a regular report every Monday on all steel and nonferrous markets, and articles on new technical developments of importance. On top of that No. 1 job, the ninth floor contingent is planning another batch of special reports, which we're sure you'll find as helpful as the 1948 crop. We should probably be satisfied if the fare offered our readers in 1949 is equal to the 1948 material, but we're sure it won't be. It will be better—far better, if such a thing is possible.

More 205ths

One thing probably won't be changed at all during 1949. This column plans to stay in business at the same old stand, serving the same old 204 readers, at least until another survey is made. We feel a little like the Democrats right now, though, because of all the letters we've received from claimants to the title of 205th reader. The survey must have been wrong! One thing we know for sure is that as long as the boss is willing, and as long as there is an issue coming out on Monday, we'll be filling this space.

For Shame, Cousin

Speaking of our 204 readers reminds us that we have a batch of relatives included in that total. The other day Cousin Etaoin, who is influential in the operations of James McKinney & Son of Albany, N. Y., wrote in to let us know that he still reads this page, while the purchasing agent reads the rest of the book. We think it's unfair to the purchasing agent, because Etaoin says he tears out this page before he passes the issue along.

Prolific Purple Prose

Maybe it all started in California with Honest John or Madman Muntz or somebody; we wouldn't know, except that used car peddlers the country over are pulling out all the stops trying to attract buyers—or at least trying to be funny. Here are three classified liners from a recent Detroit newspaper:

"An electromagnetic commercial aircraft direction indicator, ground amber mist penetrators, Hollywood sun visor, newly designed side mirrors, wireless receiver, chill chaser and other handsome accoutrements enhance the exquisite design of this Normandy Blue Plymouth. Displayed all day Saturday at the Haggard Harrisons.

"Words reveal only the inadequacy of the human mind in describing the inspiring extravaganza presented in this modish Mercury of 1941. Brilliant chrome universal position cowl spotlights, gleaming dual mirrors, kaolin-base white sidewalls, all a parade of splendor and incomparable elegance at the Heavenly Harrisons.

"It's a beauty and for duty, it will do a real job. It's a honey and for the money you'll buy without a sob. Better hurry and don't worry, there's sure to be a mob. Yes, it is an emerald green '40 Ford Tudor. It's at the low-down lot—(low down payment, that is). The Helpful Harrisons."

Stuck Again

Here's a little free advertising. We have been working, as you know, on some solution to the problem of how to attach route slips to our shiny new covers. Alling & Cory Co., 321 St. Clair Ave., Cleveland, have been helping out by supplying all the different kinds of gummed paper they can lay hands on. We finally located one which will stick—at least all the samples we've slapped on are still stuck a month later. A & C says their specification is "slow sticking gum #8210", so all of you who have been having the same problem and want to get it licked (!) can obtain some of the same stuff. No charge for this service. Just want to keep you all stuck on STEEL!

Shrdlu

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STEEL

Vol. 123—No. 26 December 27, 1948

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Forum on Technical Progress
Business Trends and Statistics

STEEL

The Magazine of Metalworking and Metalproducing

VOL 123, NO. 26 — DECEMBER 27, 1948

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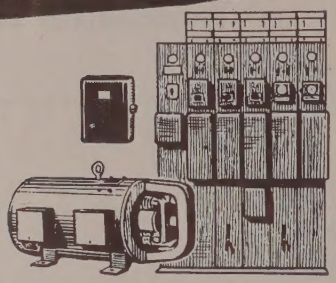

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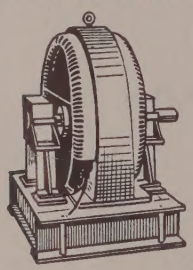

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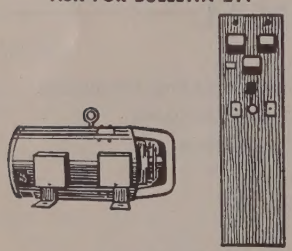

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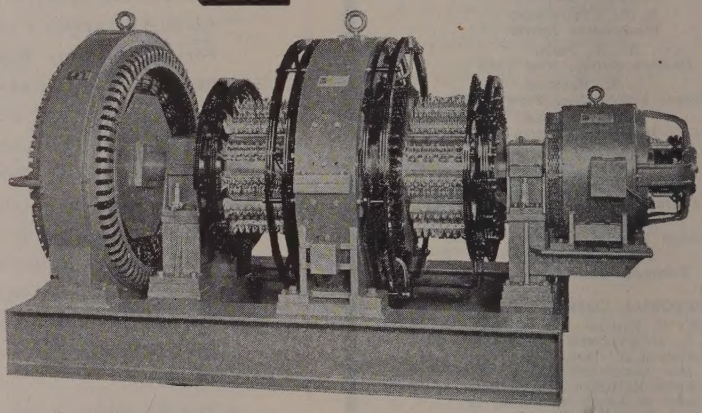

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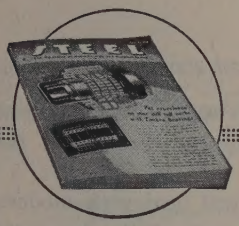

December 27, 1948

As the Year Ends

In viewing the events of 1948 in retrospect, most persons identified with the metalworking industries will conclude that while they had to contend with annoying difficulties throughout the year, their accomplishments were gratifying in many respects.

Production in most lines was at or near postwar peaks. Employment was at a level never before approached in peacetime. Profits, as measured in inflated dollars, were so high as to invite attacks that they were excessive. In respect to output in relation to capacity, rate and steadiness of employment and percentage of profit to sales, the averages for the metalworking industries in 1948 were impressive.

In spite of this, few persons in these industries are fully satisfied with the results of the old year or with the prospect for the new year. They are concerned with unsolved external problems which plagued them in 1948 and will continue to plague them in 1949.

One of these is the foreign situation. In some areas our nation has made gains in the cold war initiated by Russia. In other areas, notably in the Far East, our position is deteriorating rapidly. The outcome is extremely important to American industry.

Another disturbing external problem is the government's policy in regard to pricing practices. The impact of the suddenly adopted mill pricing was violent enough in the sellers' market of 1948. What will it be in the buyers' market that will prevail in an increasing number of products in 1949? Clarification of this chaotic situation is a must if industry is to function smoothly.

Another problem is the President's program of increased expenditures for varied government paternalistic projects, of standby authority to impose wartime controls and of excess profits for industry. He proposed these in January last year, again in August and—because he believes he received a mandate from the people on Nov. 2—he will propose them again next month. Industry cannot make plans for the future with any degree of confidence until the absurdities are removed from the President's program.

Perhaps the most hopeful sign appearing as the old year closes is the strong likelihood that the economic adjustments now in progress will force the government to tone down the President's proposals to realistic dimensions.

* * *

LOW DOWN ON PROFITS: Thus far testimony at the hearings of the joint Committee on the Economic Report has had a sobering effect upon those who are claiming that industry's profits in 1948 are excessive.

Witness after witness has been hammering home the fact that on the basis of the volume of business, or the relation of current operations to capacity, industry's profits today are lower than at previous periods of prosperity. Enders M. Voorhees of United States Steel Corp., Charles E. Wilson of General Electric Corp., H. G. Batcheller of Allegheny Ludlum Steel Corp., M. E. Coyle of General Motors Corp. and others laid the cards on the table to show that although the total profits of industry as reported in orthodox earnings statements are high statistically, they are far from excessive on any number of realistic yardsticks of comparison.

How this testimony will stand up when the committee chairmanship shifts to anti-business personnel is an open question. However, all present signs indicate that the zeal to attack "excessive" profits is fading. A few cases of sharply diminishing profits, such as that of Armour & Co., wherein a profit of $30 million

(OVER)

in 1947 was followed by a deficit of almost $2 million in 1948, will jolt those who wish to limit profits as much as will testimony before the committee.

The indications that profits will be more "spotty" in 1949 than in 1948 will be an effective deterrent to reckless government curbs on profits.

—pp. 26, 39

* * *

HANDS ACROSS THE SEA: Anglo-American Council on Productivity has created five task committees to help Britain to increase the efficiency of her industries. Some of the problems assigned to these committees for study are most interesting.

One group is asked to determine whether the United Kingdom generates sufficient power to operate modern tooling. Another is charged with the responsibility of exploring the extent to which British industries would benefit from greater specialization in the output of their products.

These questions imply that British manufacturing should conform more closely to the American pattern, which probably is true to a certain extent. On the other hand, there are British methods we could adopt with profit.

—p. 32

* * *

A STURDY 3-YEAR OLD: To the Material Handling Institute and the Management and Material Handling Divisions of the American Society of Mechanical Engineers goes the richly deserved honor of raising the curtain on the 1949 program of industrial conventions and exhibitions. They are joint sponsors of the Third National Materials Handling Exposition to be held in Philadelphia, Jan. 10-14.

A skeptic may wonder how it is possible for this show, in its third year, to rank as one of the five largest industrial expositions in the nation. One of the answers is that materials handling is one of industry's most important current problems. Efficiency in handling and storing materials offers more attractive opportunities for economy in manufacturing operations than any other single factor.

That is why cost-conscious executives will be flocking to Philadelphia two weeks hence.

—p. 61

* * *

ABC OF IRON AND STEEL: Publication in this issue of Part II of "Production of Electric Arc Furnace Steel," by Walter M. Farnsworth of Republic Steel Corp., concludes the first of 27 articles on the fundamentals of steelmaking which will appear throughout the coming year.

Articles in this series will deal with modern practice in every department of the iron and steel industry extending from raw materials to the finished products. Each article is written by a man whose outstanding ability and experience in his particular field entitles him to write with authority. While much of the subject matter is technical in character, it has been written and edited with the objective that the text can be easily understood by the layman. In fact, this current series in many respects is the modern counterpart of "The A.B.C. of Iron and Steel," which ran serially in this publication several decades ago and became one of the most popular books in the literature of the iron and steel industry.

We have high hopes that this series will prove to be one of the most widely read features that has appeared in our pages in many years.

—p. 76

* * *

FACTORS IN "BIGNESS": After listening to the testimony of M. E. Coyle of General Motors at hearings of the Joint Congressional Committee of the Economic Report, Senator Flanders said: "You represent the greatest economic empire in the world. . . . You have grown big through good management, in open competition . . . and you are still growing. Your history seems to be leading us to an economy of economic empires. It poses problems which future congresses will have to deal with in ways I cannot today visualize."

Said Mr. Coyle: "We grew because the public wanted what we made. We have no single asset that anyone else who wants to compete cannot duplicate. . . . What we have is management intelligence. As long as we can attract and keep the most intelligent type of employees, we are bound to remain big."

Here are statements of great significance. Each presents viewpoints which must be weighed carefully in considering future relations between government and business. —p. 39

Happy New Year!

E. L. Shaner

EDITOR-IN-CHIEF

News Summary

PROFITS— Much has been said in recent weeks, especially by labor leaders and the administration, about industry's postwar profits. Labor has pointed to corporate earnings and argued that new wage increases could be paid out of profits, without necessitating any further price increases. Last week, metalworking executives presented the other side of the picture to the joint congressional Committee on the Economic Report (p. 26). Postwar earnings figured as a percentage of sales generally are lower than prewar. Considered in terms of what today's dollar will buy, profits are modest. A leading steelmaker pointed out that profit on 15 million tons of finished steel in 1940 would buy 30 blast furnaces; the 1948 profit on the same tonnage of products would have to be stretched to buy 13 stacks.

PRICING— Propects for legislative clarification of the pricing muddle brightened last week as two leading Democratic senators (p. 25) indicated they will push for decision on the matter. Meanwhile, attorneys for the Federal Trade Commission and the Trade Policies Subcommittee of the Senate are exploring the problem, may come up with a clarification of the FTC position of freight absorption which will obviate the necessity for legislation.

ALLOCATIONS— Monthly steel allocations in programs now in effect and extended beyond Feb. 28 or recommended for extension total 503,764 tons (p. 29). Commerce Department is resisting pressure to expand certain programs. Officials are cool toward proposals to raise the freight car program from 10,000 to 12,000 or 14,000 monthly.

LABOR— While administration officials prepare a campaign for outright repeal of the Taft-Hartley Act, Republican framers of the law are offering amendments designed to save a major portion of the statute (p. 25). Neutral observers believe the 81st Congress may display an independence on the issue which will be disconcerting to the administration.

DEFENSE PREPARATION— Manufacturers who are eager to learn how they can fit into the preparedness program need not wait for the Munitions Board to come to them. Rather they are advised (p. 34) to approach the appropriate branch of the armed services with an outline of their facilities, personnel and capacity. In some cases, such manufacturers who have not yet been covered by the Munitions Board survey have been successful in obtaining contingent orders.

FOREIGN— France hopes to expand its steel capacity (p. 35) to 15 million metric tons by 1951-53, about double 1948 output. American machinery will equip some of the new plant.

NEW AUTO MODELS— Motordom is awaiting unveiling of new Chrysler models in February. The new lines are being eased into production gradually, with some pilot models already completed (p. 39). Chrysler has had time to weigh the advantages and disadvantages of the new styling of competitors and its new lines will tend toward conservatism, with comfort and convenience emphasized. Tooling costs exceeded $75 million.

HERE AND THERE IN INDUSTRY— Superior Steel Corp. has underway a $2.5 million expansion and modernization program (p. 36) . . . . Some household appliance manufacturers are bullish over prospects for 1949. Vacuum cleaners will enjoy a good, perhaps boom, year, according to an industry spokesman (p. 37). Refrigerator makers are optimistic (p. 30) . . . . Laundry dryer manufacturers doubt that capacity will be adequate (p. 37) to supply demand for automatic tumbler dryers . . . . Korhumel-Heffron & Preiss Steel Co. (p. 42), a war-born warehouse, has opened a new plant at Evanston, Ill. . . . . The Navy has awarded Lustron Corp. a substantial contract for prefabricated housing (p. 34) . . . . Kaiser Co. has opened a new 52-mile railroad to help move ore supplies from Eagle Mountain to Fontana (p. 28) . . . . Continental Can Co. plans to build a new plant near Pittsburgh (p. 30) next spring .

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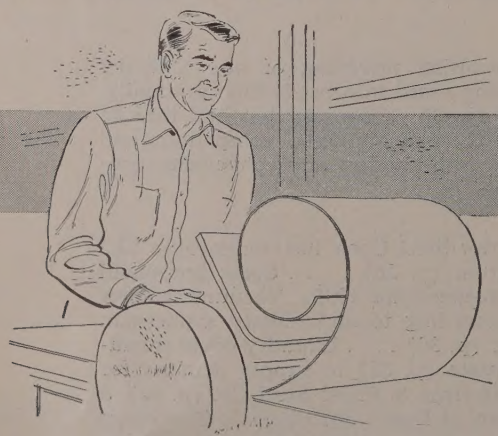

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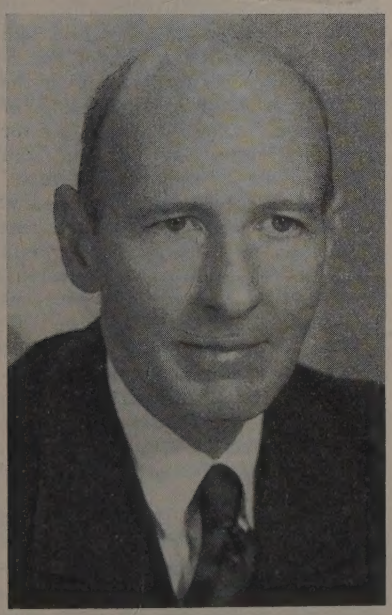
Pricing Clarification Promised

Influential Democratic members of Congress to seek action removing uncertainty and confusion with respect to legality of basing point and similar pricing

PROSPECTS appeared a little brighter last week that the 81st Congress would do something to remove the confusion and uncertainty in business circles over pricing resulting from interpretations of the Supreme Court's decision in the Cement case outlawing use of basing point pricing in that industry.

Since the Democratic sweep in the November election the view has gained wide acceptance in industry that it was unlikely the new Congress would do anything to clarify the situation, and certainly would not amend the anti-trust laws.

Little Previous—Last week, however, it appeared this view was a little previous. At any rate, two Democratic senators who will wield considerable influence in the new Congress indicated they would push for a decision in the pricing question. They are Sen. Edwin C. Johnson (Dem., Colo.), and Sen. Brien McMahon (Dem., Conn.) Senator Johnson is slated to head up the Senate Commerce Committee and may take over the chairmanship of the Trade Policies Subcommittee from Sen. Homer E. Capehart (Rep., Ind.).



ROBERT B. DAWKINS

This subcommittee has been probing the pricing problem. Senator McMahon is expected to be an influential member of the Trade Policies Committee and may be named its chairman.

Senator Johnson, in a statement, said he wanted to make it clear that he appreciated the importance of the preliminary (Capehart) hearings, and added that after studying the testimony he intends to push the matter to a legislative conclusion based on the facts without prejudice.

Absorption of freight should be permitted, and business men should not have any reasonable cause to doubt that this is the case, Senator McMahon told STEEL last week.

"Systematic absorption of freight which is not done as a result of collusion or conspiracy," he said, "should be legal."

Asked whether he would approve of freight absorption, independently done, whereby a seller matches a competitor's delivered prices in the competitor's territory, Senator McMahon said he did not care to comment any further at this time.

Against F.O.B. Pricing—Another significant development of the past few days was the action of the Business Advisory Council to the Senate Trade Policies Subcommittee in voting to advise Congress against putting all industry on an f.o.b. pricing basis.

It is not yet certain, however, whether Senator Capehart's report will recommend new legislation. Some observers in Washington are of the opinion the committee may base its policy upon the outcome of conferences between its general counsel, William Simon, and the legal advisor to the Federal Trade Commission, Robert B. Dawkins. These conferences still are going on, and it is barely possible common ground may be found for understanding of the Federal Trade Commission's position on the freight absorption question which would obviate clarifying legislation.

General Counsel Simon has been critical of FTC policy and over recent months has spoken before numerous audiences throughout the country on the implications of the Supreme Court's cement decision for the whole economy. Attorney Dawkins of the FTC is described as a "lawyer's lawyer," with an open mind on the pricing subject.

GOP Offers T-H Changes

WHILE the administration, with the enthusiastic backing of organized labor, drafts recommendations for repeal of the Taft-Hartley Act, Republican framers of the law are countering with proposals for amendments designed to save the law.

The joint House-Senate labor committee (Republican dominated) last week agreed to recommend these changes:

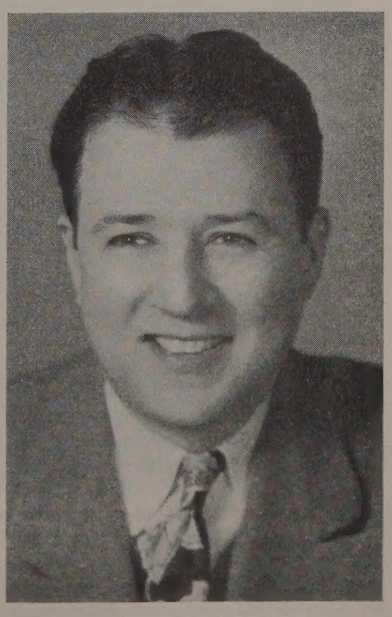
Requirement that employers as well as union officials file anti-Communist affidavits.

Requirement that the unions reimburse workers who have been barred from their jobs by mass picketing.

Elimination of the act's requirement of a vote before a union can bargain for a union shop contract, but with retention of restrictions on compulsory union membership in certain cases of transitory employment.

Ban on strikes to compel an employer to grant conditions comparable to a closed shop.

Authorization for the President, in emergency strike situations, to apply for injunctions as soon as an emergency board is appointed, and elimi-



WILLIAM SIMON

nation of a union referendum on the employer's final offer of settlement.

Removal from the National Labor Board's jurisdiction of local businesses, operations of which only remotely affect interstate commerce.

Permission for a union to strike during the term of a contract 60 days after giving strike notice.

President Presses for Repeal—The Chief Executive is reported ready to ask Congress to repeal the act and re-enact the Wagner Act in his state of the union address. Later, he will send a special message to Congress outlining changes desired by the administration in the new act.

Administration aides indicate he will ask about the same provisions that he recommended 2 years ago when he requested a ban on jurisdictional strikes, prohibition of secondary boycotts, and machinery for dealing with strikes which threaten the national health and security.

Action Uncertain—Just what Congress will do with the Taft-Hartley Act remains an open question. A majority of members in both houses of the 81st Congress voted for T-H as members of the 80th Congress.

On the other hand, last November's election results favored those campaigning for repeal. A majority of the new congressmen were elected with organized labor backing. This may cause important shifts among the legislators who went on record for T-H during the 80th Congress.

Many observers expect that the 81st Congress will overhaul the present act rather than repeal it outright.

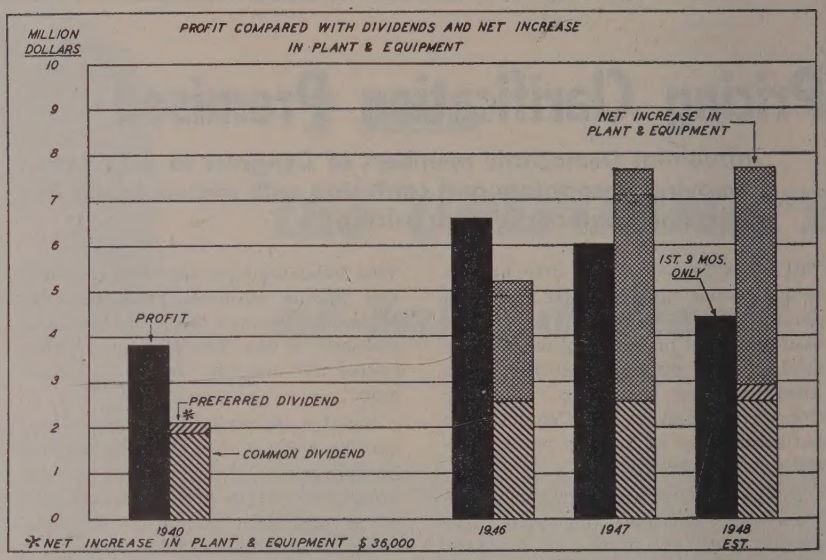
Will It Work Both Ways?

WILL the United Auto Workers hold to its contract with General Motors should the Consumer Price Index drop sufficiently to require a downward adjustment in wages next spring? Under the GM-UAW agreement wages move up or down 1 cent an hour for each 1.4 points that the index fluctuates. The test will come in February when the index will be used to determine whether a small wage reduction, narrowly averted in November, becomes applicable to the first pay in March.

Should GM workers be required to take a reduction in pay at a time when other unions are beating the drums for a fourth round increase and after one auto manufacturer has stated that a fourth round increase appears "inevitable," considerable grousing may be expected from the GM union membership. Walter Reuther, UAW president, has launched an educational campaign to prepare GM workers for an index decline.

DISPOSITION OF PROFIT, 1946-48 VS. 1940

(By Allegheny Ludlum Steel Corp. and subsidiaries)



Industry Argues Profits Are Modest

Metalworking executives tell congressional groups earnings now are lower percentage of sales than prewar and in many cases too low to maintain plant and equipment

METALWORKING profits, in terms of current volume of business and in light of the lowered purchasing power of the dollar, are lower than in prewar years. Postwar profits have not kept pace with the increase in sales nor the advance in payrolls.

Figured as a percentage of sales, today's profits are modest. Figured in terms of what they will buy, they ofttimes are inadequate to offset the increased cost of replacing plant and equipment.

This was the answer given last week by top executives of the steel, automobile, electrical and other metalworking and manufacturing industries to charges that postwar profits are excessive in testimony before the joint Committee on the Economic Report.

Five Per Cent on Sales—Enders M. Voorhees, chairman of the Finance Committee, United States Steel Corp., said earnings of U. S. Steel for the first nine months of 1948 amounted to about 5 per cent of sales. In 1947, profits figured out to 6 per cent of sales.

Both years were periods of high sustained operations, above 90 per cent of capacity, when earnings might be expected to be high. In prewar years in which operations exceeded 90 per cent of capacity, U. S. Steel's earnings as per cent of sales averaged 18.2, more than three times as much as in 1947 or 1948.

"Putting it another way, the amount earned in 1947 of 6 per cent was the percentage that was characteristic of prior years when the operating rate ranged from 40 to 50 per cent. Historical comparison, in the absence of statistical distortions, can yield only one conclusion: U. S. Steel's current rate of profit is exceptionally low in the light of its present full capacity rates of operation."

Hidden Erosion—Mr. Voorhees told the committee that a lack of understanding of costs is resulting in the hidden erosion of American tools of production. Allowable set asides for wear and exhaustion, he said, are not adequate to replace such facilities, due to recent increases in costs. Coke ovens now cost 173 per cent more than in 1939, a blooming mill costs 167 per cent more than in 1943, a blast furnace costs 110 per cent more than in 1941.

Present nonrecognition of the true cost of replacing the tools of production in computing taxable income means that the federal government is participating in, and even forcing, the erosion of the nation's tools of production.

"More than that, those who would avoid that erosion in the management of their own enterprises are compelled not only to provide against it, dollar for dollar, but for every dollar of disallowed cost they must find

an additional 67 cents for the government in taxes."

Dollars Buy Less—Comparing operations for the full year of 1940 with the first nine months of 1948, in each of which periods production was about 15 million tons of steel products, Mr. Voorhees pointed out the profit earned in 1940 would buy 30 new blast furnaces, whereas the profits in 1948 would have to be stretched to buy 13 blast furnaces in 1948.

H. G. Batcheller, president, Allegheny Ludlum Steel Corp., estimated 1948 profits of his company would run between 5 and 5½ per cent of sales, against 7 per cent in 1940.

Mr. Batcheller suggested that present steel profits should be judged in the light of present operating rates, near 100 per cent of capacity. Over any extended period, he said, operating rates can not be expected to be more than 75 to 80 per cent of capacity. The present cost-selling price relationship on steel products generally would permit little if any profit at this operating level.

Outlays Exceed Earnings — Mr. Batcheller offered the committee a chart showing investment in plant in the years 1940, 1946, 1947 and 1948, the working capital of the company, and comparing earnings with the combined outlays for dividends and net increases in plant. The combined outlays substantially exceeded earnings in 1947 and are expected to exceed earnings in 1948 (see accompanying chart).

Charles E. Wilson, president of General Electric Co., told the committee GE profits are very low.

While GE wages have gone up 90 per cent since 1940, selling prices have advanced only 40 per cent and profits paid out as dividends have gone up only 8 per cent. GE currently is making a profit of 7.4 cents on each dollar of sales, against 12.5 cents in 1939.

M. E. Coyle, executive vice president, General Motors Corp., said his company's dividends this year will be 30 per cent above the 1936-41 average, compared with a 56 per cent gain in employment, a 180 per cent jump in payrolls, and a 180 per cent increase in dollar sales.

Present corporate profits, said Dr. Emerson P. Schmidt, economist for the United States Chamber of Commerce, constitute a normal peacetime relationship to national income.

Sees 68 Million Tons in 1949

SIXTY-EIGHT million tons of finished steel products can be produced in 1949, if the industry is free from strikes. This estimate was offered the joint congressional Committee on the Economic Report last week by Benjamin F. Fairless, president, United States Steel Corp.

The 1949 tonnage predicted by Mr. Fairless would represent an increase of 5 million tons over 1947 and 7.5 million tons more than the average shipments during the war years. It is an indication of the postwar expansion accomplished by the steel industry.

United States Steel Corp. will place in operation in 1949 about 600,000 tons of additional ingot capacity and will spend more than $250 million for plant and equipment.

New Firms Invest $7 Billion

RESULTS of a study by the Commerce Department show that new firms starting operations in the 1945-47 period invested an original $7 billion in these enterprises. Of the total, $2.5 billion was expended on new plant and equipment, $1.2 billion on used plant and equipment, $1.7 billion for accumulating inventories and the remainder in other working capital.

Largest single source of funds for these new enterprises was the personal savings of the entrepreneurs which furnished $4.4 billion or nearly two-thirds of the total. Of the remainder, $1 billion came from bank loans, $500 million from supplier credit, $800 million from other loans and approximately $300 million from capital stock subscriptions. The contribution of new firms to the flow of captial investment is of considerable importance.

Continuance of the investment boom of the postwar period will depend on the capital expenditures of established companies, the department believes.

Negotiates with Copperweld

WASHINGTON sources reported last week the federal government is trying to work out an agreement with Copperweld Steel Co. to sell its properties at Warren, O., as a single unit.

It is understood some of the problems in arranging a lease or sale of government-owned facilities at the big electric furnace steel plant upset sale of Copperweld's portion to Borg-Warner Corp. recently.

Some other prospective buyers, including a New York financial group, have been looking at the plant, and it is understood the "packaging" of the plant is aimed at one of these purchasers. A Reconstruction Finance Corp. source declined comment on rumors that it might finance the purchase.

The Warren plant was started just before the war. The Defense Plant Corp. put $19 million into facilities to boost its alloy steel output. It has offered these to Copperweld, which declined to buy. A WAA spokesman disclosed the government and Copperweld are "talking terms" on the proposed joint sale.

MACHINING ANVIL BASE: A massive solid steel forged block is being machined into an anvil base for a 12,000-pound forging hammer for the Worcester, Mass., plant of Wyman-Gordon Co. Machining was done at the Homestead Works of Carnegie-Illinois Steel Corp., a 14-foot planer taking off the rough outer surface. Finished weight of forging is 105 tons

West's Ore Reserve Up

Recently discovered or developed deposits to support West's expanding steel industry

RECENTLY discovered or developed western iron ore deposits give promise of supporting the West's expanding steel industry. Huge iron deposits in Utah, investigated by the Bureau of Mines, makes good news for U. S. Steel Corp. and Kaiser Co. which are expanding operations in that area. Kaiser has also just completed a railroad to its Eagle Mountain mine which brings ore 350 miles closer to the Fontana, Calif., plant where capacity is being boosted.

The Bureau of Mines estimates that 500 million tons of ore exist in Iron county, Utah, much of it good enough for western steel production. A recently released report on wartime studies of the region says 100 million tons "can be conservatively classified as measured and indicate reserves with a grade of 45 to 50 per cent iron." An additional 250 million tons can be "inferred" from geological evidence. Since the unexplored areas are greater than those already investigated, it is probable, the report said, that at least 150 million tons more can be developed eventually. The district has produced 10,139,500 tons since large-scale operations began in 1923.

Use Expected To Increase — Although only about 2 million tons of ore have been mined annually in the state in recent years, more intensive mining is expected because U. S. Steel's Geneva Steel Co. is expanding and because Kaiser recently acquired a blast furnace in Utah. Most of the Utah iron properties are owned by the corporation, but some are held by Kaiser.

Geneva has already made test runs at its new Geneva, Utah, hot-rolled coil mill, major part of a $18.6 million construction program planned for the company. The company has just completed conversion of its plate mill to provide facilities for production of the hot-rolled coils which will be shipped to the new cold reduction mill at Pittsburg, Calif., operated by Columbia Steel Co., another U. S. Steel subsidiary. It is indefinite, however, as to how soon Geneva will go into commercial output of the hot-rolled coils because various production-line problems must still be ironed out.

Eagle Mountain Mine—Opening of a 52-mile railway link gives Kaiser's Fontana plant an ore reserve of about 25 million tons at Eagle Mountain, only 153 miles away. With the opening of this mine, Kaiser has closed its Vulcan deposits in eastern California near the Arizona border, but its Utah mines, another major source of ore, will remain in operation. Kaiser also holds about 50 mining claims in the region adjacent to the Eagle Mountain mine. The Eagle facility will supply about 1200 tons of ore daily, but this will be stepped up to 2400 when Fontana's second blast furnace is completed.

With completion of a new 52-mile rail link to its Eagle Mountain mine, Kaiser Co. now has iron ore supplies only 153 miles from its Fontana, Calif., plant. The mine, an open face working as shown above, has an estimated 25 million tons of ore

Work will start on this unit shortly after the new year begins, together with construction on 45 coke ovens, a new sheet mill and a new pipe mill, all part of the second phase of a $35 million expansion program. Fontana is approaching completion of the first phase of this project, construction of a seventh open hearth furnace and two new soaking pits.

Plans Sheet Mill—Fontana's new sheet mill, when completed, will roll sheets up to 78-in. in width. The company's present hot strip mill rolls sheets up to 16 in., and a cold rolled mill produces widths up to 24 in. The new pipe mill will make pipe up to 14 in. in diameter compared with a maximum of 4½ in. pipe now being produced at Fontana.

These new plant expansions are expected to be completed by late 1949 or early 1950.

When all of the current program is completed, investment in the wartime built Fontana plant will be raised to $171 million.

Scrap Needs Grow on Coast

THREE times as much steel scrap as in prewar days will be required in the next year by the steel and foundry industries of the West Coast, according to H. W. Christensen, director of purchases, Columbia Steel Company, United States Steel's western subsidiary.

Mr. Christensen spoke before the Pacific Coast Conference of the Institute of Scrap Iron & Steel.

The scrap industry is the most important independent supplier of raw materials to the steel and foundry industries, he said. Every ton of scrap consumed in steel-making furnaces is practically the metallic equivalent of 1 ton of pig iron. Every ton of scrap melted conserves 3-1/2 to 4 tons of irreplaceable natural resources to say nothing of the smaller requirement of transportation facilities.

"Increased steel tonnages are even pouring into today's markets from new facilities that were conceived and begun almost 3 years ago," he said. "This peacetime program for both large and small steel manufacturing companies amounts in money to a total of $1,500,000,000 for improvements and new facilities.

"Further development and expansion of steel producing facilities in the western states is in itself a gigantic undertaking.

"The average prewar consumption of purchased scrap on the Pacific Coast for the years 1938 to 1940 inclusive was 785,000 net tons. The total purchased scrap requirements for 1949 for both the steel and foundry industry on the West coast will be 2,394,000 net tons," he said.

Steel Allocations Under Study

Office of Industry Cooperation considering extension of several existing voluntary programs. Number of new requests, including rails, received

DESPITE pressure for an increase in the freight car construction program from 10,000 cars monthly to 12,000 or 14,000 cars, Commerce Department officials in charge of steel allocations programs feel the present 10,000 car program is all that is warranted.

They propose to extend the 10,000 car program through next Aug. 31, but discussions will be held occasionally to determine if the program needs changing.

All allocations programs will be reviewed and challenged continually to squeeze out any possible water and to make sure of their validity as being essential in the public interest, according to Earl W. Clark, head of the Office of Industry Cooperation. He and his aides are now studying a number of programs to be discussed with the Steel Products Advisory Committee at a meeting in January. Newest one involves rails. Whereas the railroads ordered 1,956,642 tons in 1948, they actually received 1,566,982 and they estimate their 1949 needs as around 2,250,000 tons.

Seek Rails—Rail makers expect to produce more rails next year so that the necessity of a rail allocations program has not yet been proved.

Among other programs under study is one for grain bins for which some 50,000 tons, 18 gage and lighter galvanized sheets, were requested prior to next April.

Further study also is being made of Interior Secretary Krug's request for allocation of steel for pipelines and oil country tubular goods.

Justice Department approval has been given extension of five more programs involving steel for tank and oil field requirements, barges, tankers, merchant vessels and freight cars. These are in addition to armed forces, atomic energy and NACA programs, which already have been extended through Aug. 31.

Three programs not definitely approved as effective from Feb. 1 through August cover the Oak Ridge pipe line, mining machinery, and steel for manganese ore cars for South Africa. One program which was to be dropped now is again being considered for extension, this embracing 2570 tons of steel monthly for anthracite mines.

Present thinking calls for expiration Feb. 28 of programs providing steel for warm air heating furnaces and prefabricated housing.

In discussing the whole allocations setup Mr. Clark last week was warm in his commendation of the steel industry for its support.

"In no instance has the steel industry refused to co-operate," he said.

Total monthly steel allocations in the voluntary programs now in effect and extended or recommended for extension come to 503,764 net tons which include freight cars, atomic energy, armed forces, tank and oil field, barges, NACA, tankers, merchant vessels, Oak Ridge pipe line, mining machinery, manganese ore cars and anthracite requirements.

Product Breakdown—This total breaks down into finished products monthly as follows: Hot-rolled bars, including reinforcing, 65,968 tons; cold-rolled bars, 6150; structural shapes, including piling, 89,407; plates, 204,289; sheet and strip, 56,026; sheet and strip, coated, 7825; seamless tubing, 6978; pipe, 24,659; rails, including accessories, 1631; axles, wheels and billets, 23,625; ingots and slabs, 11,625; rigid conduit, 781; tin plate, including terne, 330; wire, including rods and products, 4450.

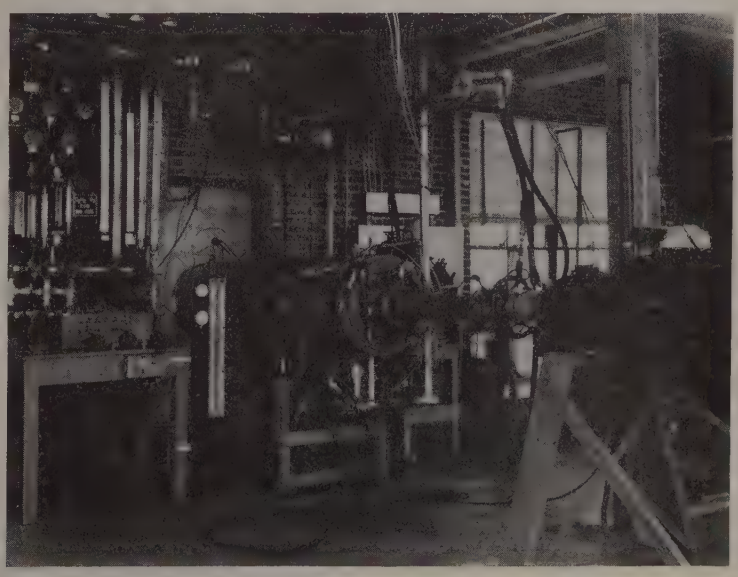
Total monthly requirements for each program are: Freight cars, 249,682; atomic energy, 16,414; armed forces, 102,505; tank and oil field, 16,530; barges, 25,000; NACA, 1926; tankers, 40,380; merchant vessels, 15,415; Oak Ridge pipe line, 4750; mining machinery, 26,400; manganese ore cars, 2192; anthracite mines, 2570. Total is 503,764 tons monthly.

Tool Engineers Meet Mar. 10-12

AMERICAN Society of Tool Engineers will hold its 17th annual meeting in Pittsburgh, Mar. 10-12, at the Hotel William Penn.

Technical session will include discussions on forging dies design, industrial applications of glass, color dynamics, machining and forming of corrosion-resistant steel, metallic spraying of hard metals and problems in machining aluminum.

Tours of the following companies' plants in the Pittsburgh area will also feature the convention: National Supply Co., Westinghouse Electric Corp., J. H. Matthews & Co., Aluminum Co. of America, Carnegie-Illinois Steel Corp., Firth Sterling Steel & Carbide Corp. and Gulf Oil Co.



RAM JET TESTER: A large stand for testing ram jet engines at simulated high altitudes has just been put into operation at Johns Hopkins University in Silver Spring, Md. It is designed to simulate flight conditions from sea level to 60,000 feet, and employs a 60-foot cooling tower. Photo shows interior of the burner laboratory, with closeup of the water-jacketed combustion chamber. Apparatus was built by Blaw-Knox Construction Co. for the Navy Bureau of Ordnance

Steel Shipments Rise

Substantial gains indicated in movement to most consuming industries during 1948

SHIPMENTS of steel products to most consuming industries were 6 to 80 per cent higher in the first 9 months of 1948 compared with the like period of the preceding year, according to data collected by the American Iron & Steel Institute. A few industries received in 9 months almost as much steel as they did in all of 1947.

Total shipments in the period are estimated at 48,400,000 net tons to all buyers against 46,545,000 in the like period of 1947. On the basis of shipments in the first 9 months the movement for the year will exceed 65 million tons. Last year the total movement was just over 63 million tons.

Shipments to principal consuming industries in the first 9 months are shown in the following table in net tons:

	1948	1947
Autcmotive	7,386,000	6,878,000
Construction	5,608,000	5,374,000
Containers	3,896,000	3,755,000
Railroads	3,843,000	3,626,000
Oil & Gas	3,125,000	2,261,000
Machinery	2,211,000	2,283,000
Household appliances	1,464,000	1,129,000
Furniture, etc.	1,253,000	1,216,000
Electrical equipment	1,171,000	1,148,000
Agricultural implements	1,051,000	891,000
Shipbuilding	431,000	239,000
Mines, quarries, etc...	238,000	210,000
All others	18,673,000	17,625,000
Totals	48,400,000	46,545,000

Steel Shipments Data Ready

THREE steel distribution tabulations have been completed by the Senate Small Business Committee based on replies to the questionnaire it sent recently to steel producers (STEEL, Oct. 11, p. 64). They will be set forth in the committee's final report of activities under Republican leadership, to go to the printer prior to the end of the year.

One tabulation shows shipments of steel to warehouses owned by steel producers, another shows shipments of steel to independent warehouses, and the third shows shipments by steel companies to their own fabricating subsidiaries.

Stampers Need More Steel

MORE STEEL, in sheet and strip, must be forthcoming, if the independent, unattached stampers are to satisfy the demand for metal stampings, according to a brochure just published by the Pressed Metal Institute, Cleveland.

No lag for metal stampings is in sight; there is ample evidence that the demand for stampings will go on increasing, the institute said.

Pointing out that the combined efforts of the steel producers and the independent stamping manufacturers are making an outstanding contribution to the high standard of living in this country, the institute emphasized that rapid expansion of the stamping industry during 1937-1947 enabled industry to increase production of a great many consumer articles.

The extent of the increases in that decade in production is indicated by the following table of just one class of products (electrical appliances requiring metal) showing the 1947 and 1937 figures, respectively: Vacuum cleaners, 3,800,687 and 1,210,191; clocks, 9,645,000 and 2,876,811; heaters, radiators, 1,865,600 and 482,950; ironing machines, 564,000 and 178,858; irons, 9,400,000 and 4,157,050; oil burners, 820,923 and 218,874; oil heaters, 1,700,000 and 450,000; radio receivers, 18,500,000 and 8,065,000; ranges, 1,200,000 and 405,000; refrigerators, 3,400,000 and 2,310,000; toasters, 3,700,000 and 2,222,970; waffle irons, 1,850,000 and 940,375; washing machines, 4,188,000 and 1,642,019; water heaters, 1,100,000 and 115,000.

"The future demands consideration," the institute concluded. "From 1942 to 1948, more than 6 million homes were connected for electric power. It is estimated that in the coming decade the use of electricity will increase 72 per cent. . . . It means a doubled proportionate increase in demand for stampings."

Says Refrigerator Outlook Bright

OBSOLESCENCE of prewar refrigerator models and a current backlog of orders in most markets combine to create an optimistic picture for refrigerator makers for 1949, according to Lee Baker, vice president of Admiral Corp.

"In my opinion we have not even begun to saturate the refrigerator market," he said.

In analyzing what has happened to the appliance market, Mr. Baker pointed out that sales took an unusual jump prior to the new credit regulations which went into effect on Sept. 20 and that a seasonal slump at the end of the year was always normal in prewar times.

To Build Near Pittsburgh

CONTINENTAL Can Co. plans construction of a plant in the Pittsburgh district early next spring.

In an action which may have been motivated by the current pricing situation, Continental follows similar moves by Kelsey-Hayes Wheel Co. which last summer bought a plant at McKeesport, Pa., and by Fisher Body Division of General Motors which is building blanking and stamping units in the area. Briggs Mfg. Co. is also reported seeking a plant site near Pittsburgh.

The Continental facility, which is to be in West Mifflinboro about 10 miles southeast of Pittsburgh, will be used for the manufacture of metal cans and crown caps.

The property on which the new plant will be built was purchased from Carnegie-Illinois Steel Corp. in 1945. It is about three miles from Carnegie-Illinois' Irvin works, one of the company's chief suppliers of tin plate.

Revises Steel Export Licensing

REGULATIONS covering the licensing of iron and steel products classified as surplus or reject material have been revised, as of Dec. 17, by the Office of International Trade, Department of Commerce.

The following commodity has been added to the Positive List of commodities requiring a validated license for exportation to all Group O and R destinations: Commerce Department Schedule B. No. 734200, mining, well, and pumping machinery; diamond bits for oil and gas well drilling.

The following commodities have been removed from the Positive List and placed on general license for exportaton to all destinations in country Group O: No. 763600, planers, matchers, jointers and molders having a unit value of more than $1000; No. 763800, veneer machinery and parts; No. 763900, other woodworking machinery and parts having a unit value of more than $1000.

Data on Gear Industry Sought

AMERICAN Gear Manufacturers Association is conducting a survey of the gearing industry by means of two questionnaires for the purpose of obtaining needed data on the industry which will be of material assistance to the National Security Resources Board's study of American industry.

When the data are tabulated, they will show for the first time the noncaptive gear cutting capacity of this country.

The association urges any manufacturer who has gear cutting tools who did not receive copies of the questionnaires to contact the association's offices in the Empire building, Pittsburgh 22.

Machine Tool Orders Up

Slight rise in November halts downward trend of preceding months. Foreign orders gain

GAINS were registered in new orders for machine tools and foreign orders during November, while shipments declined from the October level, according to the National Machine Tool Builders' Association, Cleveland. The association's index of new orders rose to 73 in November compared with 67.4 in October and reversed a 4-month long decline. Despite the trend reversal, the index was at the second lowest point for this year.

Index of foreign orders was 18.5, the highest level since April, 1947, and 4.5 points higher than for the preceding month. Shipments index was 75.5 and represented a decline of 4.9 points from October. The ratio of unfilled orders to shipments at the end of November was 4.4 to 1.

The index used by the association is based on average 1945-46-47 shipments being equal to 100 and applies to new orders, foreign orders and shipments. Average annual shipments for the three base years were $334 million.

Form Machine Tool Committee

CONSISTENT with its policy of discussing export policies with interested manufacturers, the Office of International Trade, Commerce Department, has sent out invitations to 81 interests to be represented on its Machine Tool Industry Advisory Committee.

Scope of the committee is broader than the name indicates. Those invited include producers of foundry equipment, stamping machines, presses and other metal fabricating machinery.

A meeting with those who accept is to be scheduled shortly. Discussion will center on the nature and effect of existing export controls, and also on potential efforts to promote United States sales of such machinery in certain foreign areas.

OIT now has about 50 such industry advisory committees. The others cover such commodities as steel, copper, tin plate, chemicals, automotive equipment, antifriction bearings, power generating machinery, etc.

Tankers Lead Shipbuilding Spurt

LEADING the peacetime spurt of merchant shipbuilding is oil tanker construction and not the building of passenger liners which have been called for by labor, industry and government since the war. On order or under construction on Dec. 1 in shipyards in the U. S. were 77 seagoing merchant vessels of 1000 tons or more, aggregating 1,201,130 tons, according to Shipbuilders Council of America, New York. Of this total 66 are tankers.

The large number of new tanker orders has moved American shipbuilding to third place in world shipbuilding from far down on the list. The fact that most of the new oil carriers are intended for foreign flag service reflects the nation's increasing dependence upon foreign sources for petroleum.

In the new passenger ship category the U. S. still remains far down on the list with Great Britain whose yards are building 85 passenger ships totaling 827,205 tons in the lead and Holland, Italy, France and Denmark all building more passenger ships than the United States. In addition, Great Britain has 192 tankers on order or underway and Sweden has 92. Plans have been completed for a 48,000 ton superliner and bids presented but no contract award has been made by the Maritime Commission. Newport News Shipbuilding & Drydock Corp., Newport News, Va., made the low bid of $67,350,000 on Dec. 1 on an adjusted price basis.

Aircraft Cutback Feared

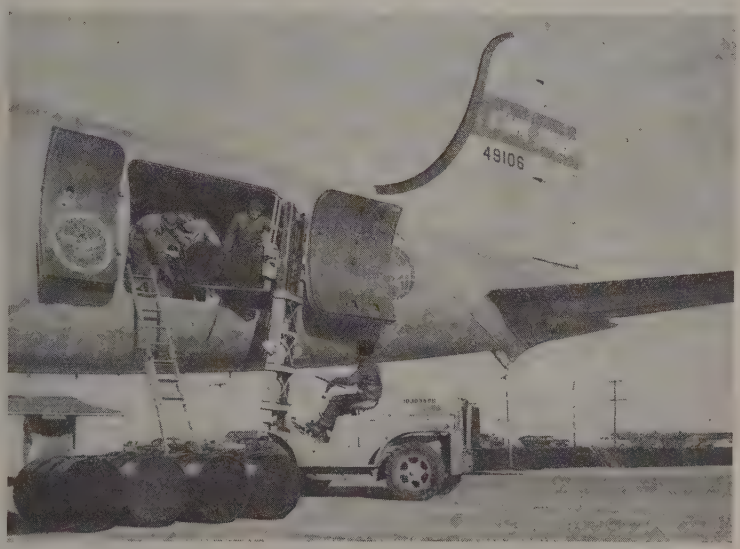
$15 billion budget for military uses would require reduction in plane building plans

AIRCRAFT industry is threatened with a sharp cutback in projected operations by the national administration's present budget plans. President Truman has placed a tentative ceiling of $15 billion, or about one-third of the federal budget in fiscal 1949-50, for the National Military Establishment.

Proponents of a strong air arm claim limitation to this amount would prevent expansion of the Air Force and possibly would necessitate a reduction from the present 55 groups to 51. It is expected that the Air Force's share of the $15 billion would be about $4.8 billion. This sum is not considered anywhere near sufficient to continue planning for a 70-group air force by 1950, for which congressional friends of the program had registered their approval last spring.

Backlogs of plane and engine manufacturers aggregate about $2½ billion, but these may be reduced if necessary congressional appropriations are not forthcoming.

So far there are no indications of what form any curtailment of the program might take.



BERLIN AIRLIFT TRAINING IN MONTANA: The Air Force is conducting a replacement training unit at Great Falls, Mont., to relieve weary airlift flyers in Berlin. Every month 120 three-man crews are readied for their new duty. Shown above are sand-filled oil drums, each weighing about 700 pounds, being loaded into a C-54 training plane to simulate an airlift load

Windows of Washington

By E. C. KREUTZBERG — *Washington Editor, STEEL*

Manufacturers can take initiative in working with Munitions Board on plans for fitting their industrial facilities into emergency national defense program

MANY manufacturers have been wondering how long it will take the armed services to reach them in the survey of industrial production potentials which the services currently are making under the supervision of the Munitions Board. The answer: This is rather slow work, and it may take some time.

Early this year, in studying a list of some 22,000 plants, it was decided to survey some 14,000 of them; so far something like 2500 have been surveyed.

But those manufacturers who are eager to formulate their plans for production in case of another war emergency need not wait for representatives of the armed services to approach them. Rather, they can take the initiative. Those managements that have rather definite ideas as to how they could be most useful in the event of another war should broach their proposals to the appropriate service.

Rear Admiral Clinton D. Braine, assistant chief of naval material and director of production policy for the Navy, told the recent Washington meeting of the Machinery & Allied Products Institute that in a number of such cases the proposals had been approved and accepted, and contingent orders issued.

Encourage Tooling — Right now, said Admiral Braine, the armed services are seeking ways and means of using peacetime procurement to encourage tooling up for emergency production. "We will have to go to Congress for the necessary authority," he said, "and in the meantime we need suggestions from manufacturers as to how the objective best can be attained. The radio manufacturing industry already has come in with a program based on negotiated contracts throughout. Such recommendations will have our most careful consideration."

Educational orders continue permissible, said Admiral Braine, but they represent an expensive technique in getting industry tooled up. So the armed services at present are restricting their use to setting up production lines for strictly new items.

An interesting question with reference to standby plants was answered by Lt. General LeRoy Lutes, Munitions Board staff director. The standby plants all have been allocated to the three services, he said, and the three services now have before them the task of selecting the corporations that would operate them in a crisis.

Hold Conference on Titanium

TO HIGHLIGHT and dramatize its promotion of the use of titanium for Navy applications, the Office of Naval Research conducted an all-day conference Dec. 16 devoted exclusively to this metal. Attendance, governed by invitation, numbered 250 and included representatives of all government agencies interested in metals, especially the armed services, and representatives of substantially all industrial and research organizations exploiting titanium.

The program embraced 17 papers —many of them thoroughly discussed from the floor—covering all phases of interest in connection with the metal. These papers and the discussions will be carried in full in a book to be published shortly. Those interested in getting copies should so write to the Office of Naval Research, Editorial Branch, United States Navy, Washington 25, D. C.

High Points — High points brought out in the conference were these: 1—Titanium is available in plentiful supply in North America; 2—titanium combines light weight with high strength and therefore is a fine structural material for airframes and many other applications; 3—titanium has high resistance to corrosion in salt water and marine environments; 4—titanium has many potential applications by reason of its high electrical resistance; 5—it has other potential applications by reason of its low coefficient of thermal expansion.

The metal now can be bought at $5 to $3 a lb, depending on quantity but discussion indicated that lower production costs will result from present development work.

Shifts in the Economy Shown

MARKED shifts in the industrial structure of the economy have occurred since 1929, the Office of Business Economics, Department of Commerce, reports.

The relative contribution to the national income of the two biggest industrial divisions, manufacturing and trade, is currently much larger than in 1929, while that of contract construction is about the same.

Markedly reduced is the percentage of the total contributed by each of the other private nonagricultural industrial divisions: Mining; communications and public utilities; the service industries; transportation; and finance, insurance and real estate.

The relative contribution of agriculture to the value of the national income is slightly larger than in 1929, despite a marked decline in agriculture's proportion of the number of persons engaged in production. Compensation of government employees comprised a larger percentage of the national income in 1947 than in 1929 but less than any year since 1930.

Manufacturing Contribution — The latest data (for 1947) show manufacturing contributing 30.5 per cent and wholesale and retail trade 18.5 per cent of the total national income. Together they are responsible for just under one-half of the value of all economic production.

More than one-third of the total production is contributed by 4 industrial divisions of approximately equal size. These are: Agriculture, forestry, and fisheries, 9.5 per cent; the service industries, 9.3 per cent; government and government enterprises, 9.2 per cent; and finance, insurance and real estate, 8.1 per cent.

The remainder of the national income is divided among 4 industrial divisions and the net inflow of income from abroad. Transportation contributes 5.6 per cent, contract construction 4.3 per cent, communications and public utilities 2.7 per cent, and mining 2.0 per cent.

Among the most stable industries are: Tobacco manufacturing; air transportation; electric and gas utilities; telephone and telegraph services; local transit operations; trucking and warehousing; religious, educational, legal, and health services; and anthracite mining.

The group of industries most subject to cyclical variation includes all of the metal manufacturing industries; stone, clay, and glass products; lumber and timber basic products; products of petroleum and coal; nonmetallic mining and quarrying; and metal mining.

Productivity Program Launched

THE Anglo-American Council on Productivity, on the basis of plans set

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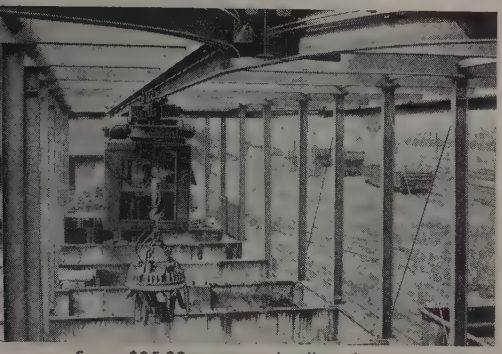

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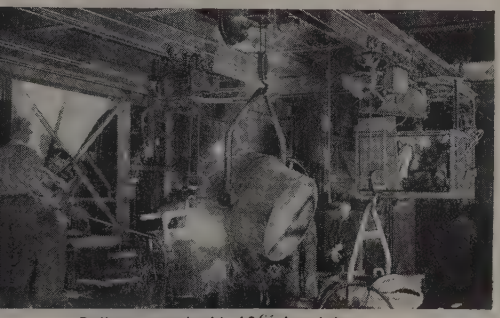

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HE AMERICAN MONORAIL COMPANY

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in motion at the recent organizational conference in London, is off to a good start, according to one of the American advisers to the council who recently returned.

He is W. Duane Evans, the Labor Department's expert on productivity. Reporting at the recent Washington meeting of the Machinery & Allied Products Institute, Mr. Evans told of the creation of 5 working committees, and a decision to hold the next council meeting in the United States sometime in the first quarter of next year.

Five Task Committees—The 5 task committees are charged with these assignments: 1—arrangements for exchange of information through plant visits, particularly visits by British teams in the United States; 2—a study to determine whether the United Kingdom generates sufficient power to run modern tooling, and also whether Britain should modify its export policy so as to keep more capital equipment to increase productivity in her own industries; 3—a study to set up a formula to afford an acceptable measure of productivity; 4—a study to determine the extent to which British industries would benefit from greater specialization in the output of their products; and 5—creation of a publicity program to keep the British public informed on efforts to increase the nation's productivity—and thus arouse national enthusiasm for the productivity drive.

Mr. Evans said that one marked difference between United Kingdom and United States industry is the far smaller scale on which technical reprints, technical publications, catalogs and similar literature are employed in Great Britain to keep industry informed. This situation, which results in part from the shortage of paper in the U. K., must be improved, he said, in the interest of improving Great Britain's industrial productivity.

In the meantime, MAPI members were told, the productivity drive has been given a lift by the decision of the Big Six automobile manufacturers in the United Kingdom to standardize on their components as far as possible.

Economic Situation More Stable

OUTPUT and employment at high volumes and some easing of inflationary pressures characterized economic activity in November, according the Commerce Department. Stabi of industrial prices and less t seasonal rise in department store sa between October and November w two aspects of a somewhat eas demand situation.

Total employment in Novem was maintained at just under 60 m lion with the usual seasonal drop farm workers being partially off by a greater than seasonal rise nonagricultural employment. Une ployment was still below 2 per ce the department reported. Wholes prices of goods other than farm a farm products were unchanged the fourth successive month wh farm prices declined 10 per cent low their level at the beginning the year.

The Commerce Department poi out, however, the rise in industr output over last year has b marked by divergent movements; pansion in the production of dura goods and easing tendencies in c tain nondurable lines. Although dow ward adjustments have taken pl in a number of fields, which now clude a few consumer durable goo like radios and vacuum cleaners, importance of the rising or steady dustries far outweighs that of declining groups.

Prefab Housing for the Navy

CONTINUED Navy approval of p fabricated housing for its shore est lishments is demonstrated by the B reau of Ships award to Lustron Co Columbus, O., of a contract coming $599,379.30.

It calls for thirty 3-bedroom a thirty 2-bedroom units for marr personnel at the Marine Corps Sch at Quantico, Va.

Bids were considered on the ba of cost of the housing per sq ft floor space; the Lustron bid embra housing containing 58,710 sq ft a came to $10.21 per sq ft. The B reau of Yards & Docks has tak care of water, sewerage, gas and el tric service under other contra and Lustron's bid calls for connect the houses to these services on sites.

In case the Commerce Departme as now expected, fails to ask ext sion beyond Feb. 28 of the volunta arrangement calling for allocation 9830 tons of sheet and strip monti for prefabricated housing, the Lustr Corp. will not lose its supply of st raw material as far as Navy is co cerned. These needs readily can added to the tonnage called for un the military allocations program.

SIGNS FOR UN BUILDING: Byron Price, assistant secretary general of the United Nations, signs a $2.5 million contract with U. S. Steel's American Bridge Co. for erecting UN Secretariat Building in New York. Looking on is Wallace K. Harrison, director of planning for UN. In background is artist's conception of the 39-story building. NEA photo

Equipment Goes Abroad

Movement overseas of American technical personnel and machinery increases

MOVEMENT abroad of American equipment and technical personnel is increasing as the capital expansion phase of world recovery shifts into a higher gear.

French capacity to produce tin plate will be increased by 50,000 metric tons annually as a result of Economic Cooperation Administration's approval of a new plant to be equipped with American machinery. American makers of producers' goods have already been awarded contracts for a new Austrian blooming mill. A U.S. executive will soon report on a revised plan for expanding German iron and steel output. Mine locomotives built in the United States are headed for open-pit sulphide ore mines in Chile.

K-F PLANT IN HOLLAND: A Kaiser-Frazer assembly plant rises on the war-shattered waterfront of Rotterdam, Holland's second city. American dollars are employing Dutch workers as Holland continues its rebuilding program. NEA photo

France

INDUSTRIAL expansion plans for France, as outlined in that nation's report to the Organization for European Economic Cooperation, call for 15 million metric tons of steel to be produced by 1951-53. At the same time quality of the products is to be improved and the costs lowered. In the coal industry a production of 60 million tons in France and 17 million tons in the Saar is planned by 1952-53. The 1952-53 automobile program envisions a 10 per cent increase in exports of automotive vehicles over the 1947 record.

In steel expansion, a major step has been taken under a program by which French capacity to produce tin plate is to be increased by 50,000 metric tons annually as a result of a procurement authorization just issued by the Economic Cooperation Administration. This will permit an increase from 50,000 to 100,000 tons in the capacity of J. J. Carnaud at Forges, at Basse-Indre, France. Total request was for $2,200,000. The ECA has authorized $680,000 for immediate outlay and will act on the remainder of the request in 1949.

Contracts coming to $2 million already have been placed by the Carnaud firm with two American equipment builders, one of which will manufacture a portion of the equipment in France.

Required for the expansion program are a 4-high cold reversing mill equipped with oil cleaning system and hydraulic control, a combination reversing and cold reduction and skin-pass mill with oil process and hydraulic control, a strip pickling line, a strip cleaning line and a tin plate shearing line.

The 52-million ton target aimed at by the French coal industry in 1948 has been missed by a wide margin as the result of the coal strikes. About 52 million tons had been counted upon from the mines this year, but output in October was only 12.8 per cent of the 1938 monthly average. In the Saar the situation was better, with 12 million tons dug during the year, or 93 per cent of 1938 production.

The production of passenger cars in October rose to the highest level since the liberation. During the month 10,172 autos and 8443 commercial vehicles rolled off assembly lines. Passenger car output is still only 67 per cent of the monthly 1938 average, however.

Austria

SUBJECT to review by the Economic Cooperation Administration, principal contracts for a blooming mill at the Donawitz plant of the Alpine-Montan Gesellschaft, Vienna, Austria's largest steel producer, have been placed tentatively with the General Electric Co., Schenectady, N. Y., Morgan Engineering Co., Alliance, O., and Hydropress Inc., New York City.

The plant, including a $100,000 roll lathe on which bids now are being taken, calls for $4,400,000 from ECA funds. It will have capacity for producing 40,000 metric tons of blooms and slabs monthly, as compared with 30,000 tons capacity for the old steam-driven mill it is to replace.

Western Germany

REVISED plan for expanding German iron and steel production is to be submitted early in January by George W. Wolf, president, U. S. Steel Export Co., 30 Church street, New York, to the Economic Cooperation Administration. Mr. Wolf earlier this year headed a mission which acted under General Lucius Clay in an advisory capacity and which submitted a report which never was released.

Now in Germany, Mr. Wolf is due back in the United States about the end of the year.

Chile

FIVE Westinghouse Electric Corp. mine locomotives will go into operation next year in the open-pit sulphide ore mines of the Chile Exploration Co. in the Andes. These units, the first of their kind to be exported, are designed to get their power either from a diesel-electric unit, a ground-level third rail, or an overhead trolley line, depending on where the locomotives are working.

The three-way power arrangement was devised to provide on-location flexibility in handling ore cars in the mines which are located at an elevation of approximately 10,000 feet at Chuquicamata.

Unravel Thread Standards

New tri-national agreement on screw thread standard explained at fasteners group meeting

MYSTERIES of the technicalities and advantages of the uniform screw thread standards which will affect the nuts, bolts and screws of the United States, Great Britain and Canada (STEEL, Nov. 29, p. 32) were discussed recently before 200 engineers from the fasteners industry.

The meeting, a symposium sponsored by the American Institute of Bolt, Nut & Rivet Manufacturers, was held in the Carter Hotel, Cleveland, to permit technical authorities of the industry to acquaint their engineering and operational men with the ramifications of the new tri-national project.

Change-Over Problems—In addition to technical details about the standards, the engineers discussed change-over problems now facing the industry. John S. Davey, assistant general manager of sales for Russell, Burdsall & Ward Bolt & Nut Co., said that the best way would be to prepare new tools and dies and completely change over at one time. The second method suggested was to replace worn out tools and dies with the new tolerance equipment, thus accomplishing a gradual shift, but risking mixed products and scrap loss. The third method was to change over one complete product at a time. Mr. Davey estimated that his company would require 5 years for the transition.

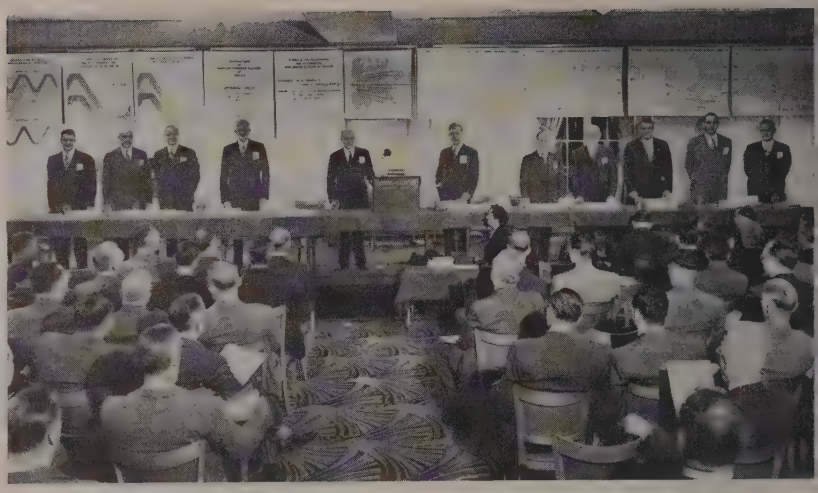
The related problems of gaging and inspection of the products and the cost of replacing tools, dies and gages were discussed by William N. Boyd, Oliver Iron & Steel Corp.

The sales job ahead of the fasteners industry with its new unified thread is not looked upon as a serious problem by Charles F. Newpher, executive vice president of National Screw & Mfg. Co., Cleveland.

Purdue Slates Welding Meeting

PURDUE University, Lafayette, Ind., and neighboring chapters of the American Welding Society will hold a welding conference on the Purdue campus Feb. 8-10.

Technical sessions will be devoted to resistance welding, non-pressure welding in production and welding methods of interest to maintenance and job shop operators. The board of directors of the American Welding Society will hold its regular meeting during the conference on Wednesday, Feb. 9.



New Universal Screw Thread adopted by Britain, Canada and the United States which will affect every metal product assembled with bolts or screws was the subject of an American Institute of Bolt, Nut & Rivet Manufacturers' symposium attended by more than 200 fastener industry leaders in Cleveland

Superior Steel Modernizes Plant

Progress being made on postwar program of specialty steel product producer. Seeks to meet growing demand for stainless, alloy, clad metal and high carbon spring steels

THE $2.5 million modernization and expansion program under way at Superior Steel Corp., Pittsburgh, reflects conviction of company officials that there is a place in the nonintegrated steel producing family for a specialty plant to meet the growing demand for stainless, alloys, clad metals, and high carbon spring steels.

Immediately following termination of the war, the company started plans to modernize plant and provide equipment to improve the quality of finished product and reduce costs.

The modernization program includes installation of a new 20 in. hot-strip mill, complete with a 3-high rougher with edging and four stands of 4-high roughing with a Bliss mandrel type coiler, a 19½ in. Sendzimir, cold mill and a 6 in. Cluster cold mill.

The Sendzimir and cluster mill are already in operation, while the roughing and 5-stand hot-strip mills are scheduled to be in service around Jan. 15. The 3-high roughing mill, built by Lewis Foundry & Machine Division of Blaw-Knox Co., is rated at 600 ft per minute and will utilize vertical edging equipment. Auxiliary equipment includes tilting tables.

Ends Squared—After initial reduction through the roughing mill, the steel goes through a shear where the ends are squared. The shear also can be used for cut length in form of narrow plates. Following the squaring operation, the steel is further reduced on the 5-stand finishing mill to finished hot-rolled gage. It is then removed automatically from the coiler to a conveyor which transfers the hot-rolled material.

E. W. Bliss Co. built the 5-stand hot-strip finishing train, rated at 12,000 tons per month, for reduction of strip from 0.200 to 0.050 in. thick at speeds up to 2000 ft per minute. Roll speed of the last 3 finishing stands will be synchronized by a variable speed drive to take care of elongation of the strip. The work rolls on first and second stands have a diameter of 14 in., compared with 12¾ in. diameter on remaining 3 stands. Back up rolls are 25 in. in diameter.

The mill will be equipped with drive of nearly 100 horsepower per in. of width. Stands Nos. 1, 2, 4 and 5 will be driven by 1500 hp motors while a 2000 hp motor will be utilized on the third stand.

The new hot mill has been especially designed for stainless, clad metals alloys and spring steels, and will replace company's 10 and 14-in. hot mills. This mill will make possible the entry of the company into a broader market for use of its clad metal product. At present the maximum strip width produced by Superior is 10 in. The new mill will permit production of strip up to about 18 in. with greatly increased yield.

Product from the 5-stand mill will be coiled on an E. W. Bliss coiler

and automatically transferred to a Link-Belt hook type conveyor leading into a new storage building. Coils to be further processed on the company's cold-reduction specialty mills will be transferred from the storage building by the same conveyor.

Cluster Mill—The 6-in. cluster mill, also built by E. W. Bliss Co., is designed to operate up to 400 fpm and will roll to a plus or minus tolerance of 0.00025-in. This unit reduces chrome nickel stainless from 0.010 to 0.004-in. in 5 passes, and actual percentage reduction of 60 per cent from the last anneal is possible. The drive is furnished by the back-up rolls instead of work rolls. Each work roll is 3¼ in. in diameter backed up by two 10-in. rolls. Total of 26 motors is utilized on this mill, including auxiliary equipment.

In addition, the company also has installed a 19½ in. Sendzimir cold mill, for use as an intermediate cold-reduction operation.

New Electric Equipment

General Electric executive says new developments will help steel men meet 1949 demand

RECENTLY developed electric equipment used in the manufacture, rolling, and processing of steel will prove of "incalculable value to the steel industry in meeting the heavy demand expected during 1949," according to H. W. Poole, manager, Steel Mill Division, General Electric's Industrial Engineering Divisions.

"Both hot strip mills and cold strip tandem mills are expected to bear their full share of the heavy production load," he declared. "The extensive revamping of many existing mills is under way now, and some of the largest reversing cold strip mills ever designed are nearing completion in various parts of the country. In addition, the increased size and speed of many of the new temper mills are important factors to consider where increased production of steel is concerned.

New Tool—"A relatively new tool —the magnetic amplifier—is expected to play as important a part in the progress of the steel industry as the Amplidyne has," Mr. Poole continued. "It has no moving parts or filaments, and operates on the principle of the dc saturable reactor wherein a small input signal can be used to control a relatively large output signal."

A new development bound to have a favorable reaction on production is the hot-topping of alloy ingots with an electric arc, Mr. Poole declared.

"The new high-speed pickling lines can also be relied upon to give a creditable performance," he stated.

Also, the induction heating of steel strip is facilitated by frequencies obtainable from rotating machines. In addition, electro-tinning lines have been given even greater capacity for some types of products by the addition of 300-kw of 9600-cycle induction heating for flow brightening.

Vacuum Cleaner Outlook Bright

THE coming year will be a good business year and in some respects may be a boom year, in the belief of Joseph H. Nuffer, president, Vacuum Cleaner Manufacturers' Association and head of the Air-Way Electric Appliance Corp.

Vacuum cleaner production will continue to be hampered, however, by shortages of steel and aluminum, he declared.

Favoring the vacuum cleaner industry, according to Mr. Nuffer, is the fact the number of families is greatest in the country's history, that one-half the wired homes are not yet equipped with the appliance, that rural electrification has opened up a current new market of about 4 million additional homes, and that vacuum cleaner prices, in relation to family income, are lower than the prices which prevailed as long ago as 1939.

Expects Big Home Dryer Demand

IT IS doubtful production facilities will be sufficient to fill the 1949 demand for automatic tumbler dryers for home laundering, according to Howell G. Evans, chairman, Dryer Division, American Washer & Ironer Manufacturers' Association and vice president, Hamilton Mfg. Co., Two Rivers, Wis.

Mr. Evans said that the immense buying of household washers in the 3 years since the end of the war, a total of about 8 million units, is striking evidence dryer sales are due for sharp increases as quickly as the industry can set itself for much larger production.

NMTBA Names Committees

ACTIVE committees of the National Machine Tool Builders' Association for 1949 have been appointed by Lloyd D. McDonald, association president and vice president of Warner & Swasey Co., Cleveland.

The committees and their chairmen are as follows: Government relations, A. G. Bryant, retiring president of NMTBA and vice president of Cleereman Machine Tool Co.; public relations, L. W. Scott Alter, president and general manager of American Tool Works Co.; sales and service, James C. Hebert, sales manager of Jones & Lamson Machine Co.; qualifications for membership and exhibits, Richard E. LeBlond, president of R. K. LeBlond Machine Tool Co.; apprentice training standards, J. Edward Goss, Brown & Sharpe Mfg. Co.; technical standards, M. H. Arms, chief engineer of Bryant Chucking Grinder Co.; standardization of hydraulic elements, J. Robinson, chief engineer of Vickers Inc.; electrical standards, W. B. Wigton, electrical engineer, Cincinnati Planer Co.; committee on JANMAT procedure, Samuel S. Shoemaker, sales engineer of Landis Tool Co.; air forces technical advisory committee, John Bernard, executive vice president of Sheffield Corp.

Calendar of Meetings . . .

Dec. 28-29, American Chemical Society: Fifteenth annual chemical engineering symposium, at Massachusetts Institute of Technology, Cambridge, Mass. Society headquarters are at 60 E. 42nd St., New York.

Jan. 4, American Washer & Ironer Manufacturers' Association: Annual meeting, Morrison Hotel, Chicago.

Jan. 6-7, Southern Association of Science & Industry: Research conference to be participated in by 14 southern states, at Atlanta.

Jan. 10-14, Society of Automotive Engineers: Annual meeting, Hotel Book-Cadillac, Detroit. Society headquarters are at 29 W. 39th St., New York.

Jan. 10-14, Material Handling Institute and American Society of Mechanical Engineers: Materials handling show, in Philadelphia. ASME's management and materials handling divisions will conduct a five-day materials handling conference concurrently with the exposition.

Jan. 16-20, Associated Equipment Distributors: 30th annual meeting, Hotel Stevens, Chicago. Group's executive office is at 360 N. Michigan Ave., Chicago.

Jan. 17-18, Institute of Scrap Iron & Steel: Convention, Netherland-Plaza Hotel, Cincinnati. Institute executive vice president is Edwin C. Barringer, Dupont Circle Bldg., Washington.

Jan. 20-21, American Management Association: Annual meeting of the association's finance division, at Hotel Statler, New York, formerly the Hotel Pennsylvania.

Jan. 20-22, Society for the Advancement of Management: Conference on industrial mobilization, Chicago. Society headquarters are at 82 W. Washington Blvd., Chicago.

Jan. 24-28, American Society of Heating & Ventilating Engineers: Ninth international heating, ventilating and air conditioning show, International Amphitheatre, Chicago.

Jan. 27, Stoker Manufacturers Association: General meeting, LaSalle Hotel, Chicago. Association headquarters are at 307 N. Michigan Ave., Chicago.

Feb. 13-17, American Institute of Mining & Metallurgical Engineers: General meeting, San Francisco.

Feb. 21-22, Purdue University and Material Handling Institute: Materials handling conference on Purdue campus, Lafayette, Ind.

Feb. 28-Mar. 4, American Society for Testing Materials: Spring meeting and committee week, Hotel Edgewater Beach, Chicago. Society headquarters are at 1916 Race St., Philadelphia.

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A. H. ALLEN *Detroit Editor, STEEL*

Mirrors of Motordom

Chrysler's new models expected to tend toward conservatism. Plymouth may offer economy model. Dodge rumored to be readying two series. Tooling costs $75 million

DETROIT

YES are being focused on what rysler Corp. will spring in its rthcoming 1949 line of passenger rs and, while a tight-lipped silence s been the rule at the Highland ark engineering and administration nter, just enough alleged informaon has leaked out to tickle the instry's curiosity over what is in ore. The new Plymouth, Dodge, eSoto and Chrysler lines are being sed into production gently, with me pilot jobs already having been oved through the assembly pattern check equipment and conveyor anges. This has been done without serious interference to current tput which will be continued into nuary. It will likely be February fore public announcement is made, which time it is hoped production ll have regained a measure of the rmal pace, now better than 25,000 eekly for all four divisions.

Tooling costs in excess of $75 million have been required by the new odel program which is not identified as a 1949 project, Chrysler preferring simply to call the models ew" rather than to date them. The penditure is the first major outlay r this purpose made by Chrysler nce before the war and presumably ight be amortized without difficulty the necessity for any sharp adnces in prices, in view of the long ns which have been made on what e substantially 1942 model tools d dies.

Tend Toward Conservatism—Conrvatism probably will govern the tyling of Chrysler's impending anges. Corporation officials have d plenty of time to observe what e competition has done and to eigh public reaction to the so-called ello" school of passenger car degn. Comfort and convenience will t be sacrificed on the altar of full reamlining, yet at the same time dustry trends toward wider seats, ghtly lower overall height and nger wheelbase with shorter over- length will be pursued.

Plymouth, it is understood, will ve two completely different models, one of them at least aimed in e direction of the lower-price adherents. No one knows today just what dollar figure would represent a "low-price" automobile, but if consideration is given to the fact the lowest advertised delivered price in the Plymouth line now is about $1360, then a low-price job might be expected to have a tag of around $1200. If the advance reports are correct, and unless Chevrolet pulls a fast one next month, Plymouth will be the first of the volume producers to show much concern over price as sales bait. Many around Detroit are convinced a car priced below the current lowest levels but still providing big-car looks and performance would be greeted by an avalanche of buyers; the question is whether Plymouth may be a trifle premature in its planning.

Dodge May Offer Two Series — Dodge, likewise, is touted as readying a move toward lower prices, by introduction of two series of models on different wheelbases, one of which will include a body design patterned after the old roadster type which disappeared many years ago in favor of the more elaborate convertible styling. Twenty-odd years ago, possibly more, the 4-cylinder Dodge roadster with its reversed-direction gearshift lever was one of the hottest cars on the road. Perhaps the aim is to make history repeat itself in the form of a 1949 version of the roadster. This body type always was about the least expensive on the list until the roadster went snazzy and became a convertible.

Chrysler will introduce a series of "silver-anniversary" models next year, commemorating a quarter-century of operations by the corporation. Actually, this appears to be jumping the gun by one year, since records indicate Chrysler Corp. was officially organized June 6, 1925, and in the Chrysler six of that year pioneered the use in the medium-price class of four-wheel hydraulic brakes, high-compression engines with air cleaners and oil filters, plus other innovations. However, the first Chrysler models were built at least on a pilot basis in 1924 by Maxwell Motor Co. with which Walter P. Chrysler became associated in 1921. Veterans in the industry recall how these first Chrysler models were barred from the New York automobile show because none had been sold, whereupon Chrysler and his associates rented the lobby of the Hotel Commodore and displayed the cars there. Dodge properties came into the corporation fold in 1928.

Automobile Production

Passenger Cars and Trucks—U. S. and Canada

	1948	1947
January	422,236	366,207
February	399,471	393,636
March	519,154	443,588
April	462,323	445,138
May	359,996	404,190
June	454,401	421,466
July	489,736	400,944
August	478,146	364,958
September	437,181	444,500
October	516,843	461,536
November	494,700*	417,492
11 mos.	5,034,000*	4,563,655
December		492,819
12 mos.		*5,056,474

* Preliminary.

Estimate for week ended:

	1948	1947
Dec. 4	125,170	110,759
Dec. 11	124,041	117,902
Dec. 18	125,452	120,657
Dec. 25	100,000	75,638

Estimated by Ward's Automotive Reports

Describes GM Profits

SPECTACULAR presentation of the operating policies and philosophy of General Motors unfolded a week ago by executive vice president, M. E. Coyle, before the profits subcommittee of the Joint Congressional Committee on the Economic Report in Washington literally set the committee members back on their heels. After hearing it, a flabbergasted Senator Flanders said: "You represent the greatest economic empire in the world. It has not grown to its present size, in my estimation, because of unfair competition or because you hold and control a limited natural resource. You have grown big through good management, in open competition . . . and you are still growing. Your history seems to be leading us to an economy of economic empires. It poses problems which future con-

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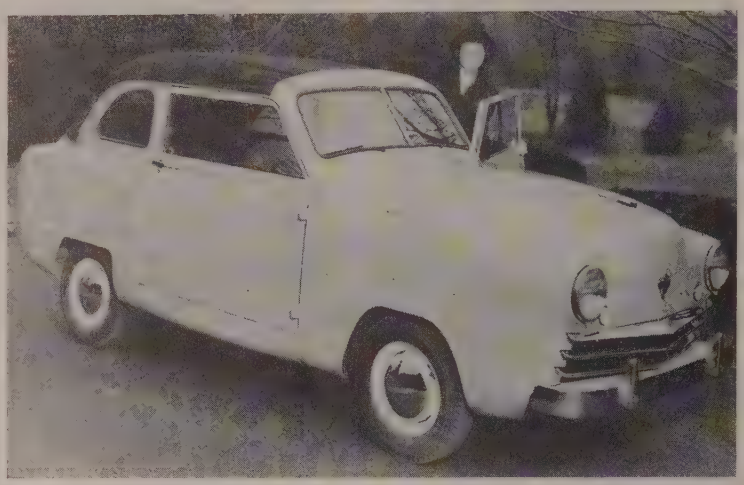

CROSLEY CONVERTIBLE: This Crosley club convertible is one of the few mass-produced motor cars selling for less than $1000. It is low-slung in design, streamlined and comes in gay colors, at $899. NEA photo

gresses will have to deal with in ways I cannot today visualize. Doesn't the responsibility of it keep you awake nights, Mr. Coyle?"

To which Mr. Coyle cagily replied, "Answering your specific question, I say 'No'. I won't start lying awake nights until our competitors begin to gain on us. . . We did not grow large because of a desire of original GM organizers for bigness or for great wealth. We grew because the public wanted what we made. We have no single asset that anyone else who wants to compete cannot duplicate. Other people going into the business could pick better factory locations, build better buildings and buy more modern machines. What we have is management intelligence. As long as we can attract and keep the most intelligent type of employees, we are bound to remain big."

Explains Pricing Technique—Most interesting in Mr. Coyle's 32-page exposition of the GM story was his analysis of pricing technique, and at this he himself is a past master, perhaps the motivating force behind the philosophy. It is predicated on a measurement of unit costs calculated on a standard or "average" volume rate of operations which takes into account plant capacity and the market potential over a long term, a necessary concept in an industry so subject to cyclical fluctuations in volume. Thus, unit costs are not affected by short-term ups and downs in volume, rather reflecting only changes in wage rates and material costs and improved operating efficiencies. The "standard volume" figure determines the allocation of the fixed items of cost, which means prices are not subject to increase in periods of declining volume in an attempt to recoup higher unit costs actually incurred as a result of such lower volume. And in periods of heavy demand, prices are neither subject to increase to take temporary advantage of the market nor to a decrease because of the higher volume realized. Basis for determining unit costs for pricing purposes remains the same in both types of market.

Mr. Coyle's analysis of the high costs of operating a business in the postwar period also rang the bell. With sales in 1948 averaging $375 million a month compared to $135 million a month in 1936-41, GM at present is carrying $670 million more of inventories and accounts receivable than in the earlier period. Most of the increase is due to today's inflated price levels. Larger cash balances also are needed to meet the higher dollar volume of business being done, and in addition all other capital requirements are greater. Machines, tools and other facilities during 1948 cost about two-thirds more than in 1936-41. Building costs have more than doubled. Small wonder that while in the 15 years prior to the war GM reinvested in the business an average of 18 per cent of net earnings, since the war, in spite of reinvesting $334 million or 45 per cent of earnings, additional funds amounting to $223 million had to be obtained on the outside.

Earnings Trail Sales—In spite of vociferous union claims to the contrary GM's per cent return on net capital employed or on total assets employed is little higher than it was in 1935-37, and far short of 1928 an 1929. Income expressed as per cen of sales has been lower than durin the entire period 1928-1941, with th exception of the year 1932. Interest ingly enough, in the ten years fro 1929 to 1938 inclusive, GM was th only automobile manufacturer t show an unbroken record of earning

Tool Kits Omitted

SOMETHING not to look for in th 1949 Chevrolet is the familiar tool k with which passenger cars have bee furnished for decades. The owne who wants a pair of pliers, scre driver, hammer or monkey wrenc will have to go out and buy his ow While the items are relatively insig nificant, the total volume of busine involved in equipping a million ca a year runs to major proportions an was a juicy morsel for participatin suppliers. However, their profit ma gin doubtless was small and they wi do better selling to jobbers furnishin the retail business. On the othe hand, it is doubtful if the averag new car buyer will bother over thing like a screw driver and pliers.

Continental Gets Army Order

CONTINENTAL Motors has receive an initial $18.8 million order from th Ordnance Department for its recen ly-developed air-cooled tank engin including authorization for facilitie and special tooling needed to bui the units at Continental's Muskego Mich., plant. Engine is a 12-cylinde V-type rated at 810 horsepower wit out supercharger and 1040 with th accessory. Production is schedule to start this winter.

Willys Profits Up

WILLYS-OVERLAND showed n profit of over $6.5 million for the fi cal year ended Sept. 30, the be earnings since 1928 and more tha double the previous fiscal year. Un production was 135,528, up 19 p cent; dollar sales were up 27 per cen

K-F Builds Taxicab

PRODUCTION of a taxicab, adapte from a 1949 Kaiser special sedan, ha been started by Kaiser-Frazer Cor Special features include safety-fla finger guards which line both re door openings, instrument pan warning light which indicates whe either rear door is not secure latched and a heavy-duty radiat grille protector mounted to the fro frame cross member. Operations the Willow Run plant terminate Dec. 23 until Jan. 3 for inventory.

Longer Life . . . Less Maintenance for PENN Truck Bodies with J&L JALLOY

HEAT-TREATED STEEL

J&L STEEL

Leading Dump-Truck Body Builder Pioneers Use of Heat-Treated Steel for Bottom Plates

ockensmith Corporation, Penn ody Division, of Penn, Pa., puts al meaning in its slogan: "*Strength Service · Economy*" by using J&L lloy and Otiscoloy steels.

J&L Heat-Treated Jalloy for truck ottoms resists the terrific shocks nd abrasion encountered in heavy-uty operations, while J&L tiscoloy High-Tensile Steel frame embers and other parts reduce ead-weight to a minimum with-ut sacrificing strength.

One mine operator reports that s stone trucks equipped with heat-eated Jalloy run an entire season ithout bottom replacements—an unheard of record in the mining industry where the materials handled are highly abrasive. In addition because longer wear reduces repair, his maintenance welding crew has been cut *84%* since using Jalloy!

J&L Jalloy is a *modern* steel for products that must be tough and strong—heavy-duty truck bodies, power-shovel buckets, dump-cars, bulldozers, scrapers, rock crushers, sand-blast equipment, and wherever abrasion is a limiting factor in the life of a product.

J&L Jalloy—a fine-grain, heat-treated steel—has an inherent ability to withstand impact and abrasion. A wide range of physical properties, with strengths up to *155,000 lbs. per sq. inch*, are available.

If you need a steel with *better* abrasion resistance, or if you want longer life from products made of steel, let us send you data on J&L Jalloy, including information on properties, heat-treatments and workability. The data booklet: "Jalloy—J&L Alloy Steel" is available on request. Use the coupon.

Jones & Laughlin Steel Corporation
Room 404, Jones & Laughlin Building
Pittsburgh 30, Pennsylvania

Please send me complete data on Jalloy and the booklet: "Jalloy—J&L Alloy Steel."

NAME_____

TITLE_____

ADDRESS_____

CITY_____ STATE_____

JONES & LAUGHLIN STEEL CORPORATION

War-Born Firm Expands

Korhumel-Heffron & Preiss, relative newcomer to warehousing, opens Evanston, Ill., facility

PROOF that rugged individualism is still very much alive in the Midwest is offered by a relative newcomer to the steel warehousing industry. The short but colorful history of Korhumel-Heffron & Preiss Steel Co. is a modern-day Horatio Alger success story, the latest chapter of which was written with the formal opening recently of its new facility in Evanston, Ill.

War-born, having been organized as a partnership 5 years ago, the firm was beset with difficulties uncommon to most new businesses in a normal period. With the Controlled Materials Plan in operation, opening a warehouse was out of the question; stocks were frozen. Machinery and men were also difficult to obtain, but the founders knew that a need existed for a slitting service; then as now manufacturers were taking raw material not ideally suited to their work, and making it fit the job became KHP's business. So with a handful of employees, one slitter, a lot of elbow grease and maybe a backward glance or two at the good positions they had left behind, the partners started business.

New Plant—To gage how successful they have been requires only a brief glance at the new plant. Modern in appearance and containing virtually every conceivable convenience for employees and visitors alike, the building is most notable for its well designed interior. Largely responsible for the lay-out was A. D. Heffron Jr., who built a model on his basement ping pong table and rearranged walls, truck loading bays, storage racks and machinery until the best combination was achieved.

As the final plans were translated into the actual building, each slitter, of which there are eight, is served by a job crane and an underground scrap baler; and each aisle has its own overhead crane, making a straight-line operation out of car unloading, storing, processing and finally shipping, all activities being under roof. In addition to slitting facilities, 4 shears are available. The 1-story plant spreads over an 11-acre tract and contains about 100,000 square feet.

Ferrous, Nonferrous Slitting Service—Its slitting service extends to include steel, aluminum, brass, copper, nickel and phosphor bronze, while warehoused are hot and cold-rolled strip, sheets, spring steel, flat wire, cold-drawn bars, carbon and stainless, seamless and welded tubing from hypodermic needle size on up, as well as aluminum sheets and aluminum building products.

Now incorporated, the company has as its officers N. F. Korhumel, president; R. R. Foster, vice president; A. D. Heffron Jr., secretary; and E. R. Preiss, treasurer. Its operations have spread, KHP branch warehouses now operating in Minneapolis, Milwaukee and Mt. Vernon, N. Y., and sales offices in Detroit, St. Louis and Los Angeles.

From operating one slitting machine five years ago, Korhumel-Heffron & Preiss Steel Co. has expanded until this huge new plant is the hub of its Midwestern activities. Ease of materials handling in straight-line operations is achieved by liberal use of overhead and jib cranes.

Colonial Vintage Iron Mines Sold

WAR Assets Administration has sold the pre-Revolutionary War iron mining property at Ringwood, N. J., to Petroleum Export-Import Corp., New York, for $700,000.

First mine openings at this property were made prior to 1740, in which year a blast furnace was erected on the site. The entire development was purchased by the government in 1942 to increase ore production for national defense. However, improvements constructed at the plant were not completed in time for it to go into operation.

The buyer plans to spend $425,000 on the property for plant improvements and mine development.

Nooter Buys Porter Equipment

AS THE concluding phase of its $500,000 expansion program, John Nooter Boiler Works Co., St. Louis, ha purchased major items of equipmer from the Mt. Vernon, Ill., plant of J. F Devine Division, H. K. Porter C Inc. The Illinois shop has been close by the parent Porter company.

Together with other new equipmer recently installed or on order, this ap paratus provides facilities for fabr cating the larger types of tanks an heavier pressure vessels used by pe troleum, chemical, foods processin and other industries. Included in th purchase from Devine is a bending ro capable of processing steel plates u to 2 inches thick and to 20 ft i width. The purchase also include Devine's car-bottom, or track-loade annealing furnace.

Lukens Plans More Expansion

LUKENS Steel Co., Coatesville, Pa has approved a proposal to electrif its 206-in. plate mill at a cost $1,715,000. The program will prob ably require from 12 to 15 month for completion, but the mill will no be closed down during the 1949 fis cal year.

Another electrification program o the 140-in. mill, which serves as breakdown unit for the 206-in. fa cility, is already in progress (STEE Dec. 6 issue, p. 100). Upon comple tion of these improvements, the ca pacity for converting carbon and lo alloy ingots into slabs or plates wi be increased by about 10 per cen The 206-in. mill has been operate by steam since its construction i 1918.

Briefs . . . .

Paragraph mentions of developments of interest and significance within the metalworking industry

Janette Mfg. Co., Chicago, manufacturer of gear motors, has appointed the following sales representatives: Edward W. Weiler, New York and Washington, for eastern U. S. Government bureaus; G. R. Haley, New Orleans and Dallas and Houston, Tex., for the south central area; L. R. Burnester, San Francisco, for the San Francisco region; and Harry C. Glaser, Buffalo, for the Buffalo territory.

—o—

General Electric Co. reports that work is nearing completion on its new $30 million turbine manufacturing plant at Schenectady, N. Y. Under construction for the past two years, the 20-acre facility will be turning out turbines and generators ranging from 20,000 kw to 200,000 kw in 1949.

—o—

Detroit Tractor Co., Detroit, has begun production of a new light farm tractor. Of the 4-wheel drive type, using standard-size automotive tires, the unit weighs 1600 lb and is powered by a 4-cylinder, 16 hp engine which will operate with full load for an hour on 0.8 gallon of gasoline.

—o—

Benjamin Wolff & Co., Chicago, warehouse handling stainless and carbon steels, tin plate, copper and aluminum, recently celebrated its 32nd anniversary with an open house. About 350 guests were present.

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Gulf Oil Corp., Pittsburgh, has completed a $19 million expansion program at its Port Arthur, Tex., refinery. New construction includes a desulphurization unit, a polyform unit, three atmospheric-vacuum topping stills and extension of docking facilities.

—o—

University of Pittsburgh, Pittsburgh, will conduct a six-weeks' course beginning Feb. 14 on management problems for executives. The course will be open to 50 men; an identical session open for another 50 will begin Apr. 4.

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Alabama reports that production of bituminous coal in the state for the first 11 months of 1948 was 16,176,000 tons. Production for the same period last year was 16,862,000 tons. Export demand for Alabama coal has dropped off considerably.

—o—

Reynolds Metals Co. announces the formation of an Industrial Parts Division. A. W. Pingel has been appointed manager, with offices at Louisville, Ky. The division will process aluminum beyond the mill products stage for industrial items.

—o—

War Assets Administration is offering for sale or lease as a whole the wartime Boeing aircraft plant at Renton, Wash. Sealed bids for the property are invited by WAA, receivable not later than Jan. 17 at the Seattle office. The plant consists of 94 acres of land, 12 buildings and other features.

—o—

Continental Industrial Engineers Inc., 175 W. Adams St., Chicago, engineer, designer and manufacturer of industrial plants, special machines and production lines, furnaces, dryers and gas atmosphere generators, has appointed R. W. Richards Co., Ridgewood, N. J., as eastern sales representative.

—o—

L.G.S. Spring Clutch Corp., Indianapolis, division of Curtiss-Wright Corp., has made the following sales appointments: L. R. Twyman & Associates, Detroit; and Van Riper Engineering Inc., Rutherford, N. J.

—o—

American Flexible Coupling Co., Erie, Pa., manufacturer of flexible couplings and other mechanical equipment, has appointed Ehret & Kinsey, Chicago, as a sales engineer.

—o—

Sears, Roebuck & Co., Chicago, has reduced prices on two automatic washers. The standard automatic has been reduced from $224.95 to $194.95 and the automatic which incorporates a suds saver from $254.95 to $234.95.

—o—

Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., has signed a $1 million contract with the air force for manufacture of a new type electronic controller to be used on reactivated B-29 aircraft.

—o—

RCA-Victor Division, Radio Corp. of America, New York, has purchased the Marion, Ind., plant of Farnsworth Radio & Television Co. The facility will become the Midwest center of RCA's television tube production after modernization and expansion.

—o—

Bureau of Reclamation, Department of the Interior, reports its new Heart Mountain power plant on the Shoshone River near Cody, Wyo., will go into full operation late this winter or early next spring. Facility already is in part-time operation to help ease the West's power shortage.

—o—

American Inventors Exhibit, Chicago, is opening a permanent exhibition hall in Chicago's Loop where businessmen and manufacturers may come to find new ideas and inventions.

—o—

International Detrola Corp. has moved its operational offices from Detroit to Newport, Ky., location of steelmaking facilities acquired in 1946. Executive office remains in New York. Newport will supervise plants in Marion, O., Huntington, Ind., Elkhart, Ind., Goshen, Ind., and elsewhere.

—o—

Cleveland-Cliffs Iron Co., Cleveland, has established a graduate fellowship in metallurgical engineering at Michigan College of Mining & Technology, Houghton, Mich. The fellowship, to be awarded on a competitive basis, becomes effective at the beginning of the 1949 fall term.

—o—

Southern Steel Works Co., Birmingham, structural steel fabricator, will change its name Jan. 1 to O'Neal Steel Works Co. The warehouse affiliate, Southern Steel Co., is to be known as O'Neal Steel Co. No change in management or policies is planned. Kirkman O'Neal is president.

—o—

Parker Appliance Co., Cleveland, has appointed J. M. Cranz Co., Buffalo, as a distributor for o-rings in western New York state.

—o—

Hydraulic Equipment Co., Cleveland, maker of industrial hydraulic control equipment, has opened a sales office at 1060 Broad St., Newark, N. J., to be under the supervision of the company's eastern sales engineer, Richard Andrews.

—o—

Consolidated Foundry & Machine Co., New Castle, Pa., has begun production of cast iron soil pipe. The New Castle plant has been converted from gray iron castings output to production of about 800 tons a month of the soil pipe item.

—o—

Sylvania Electric Products Inc., New York, has purchased a plant at Seneca Falls, N. Y., formerly occupied by Rumsey Pump Co. Production of television tubes will begin here immediately. Sylvania has two other television tube plants at Emporium, Pa., and Ottawa, O.

The Business Trend

INDUSTRIAL production as reflected by STEEL's index for the week ended Dec. 18 registered a preliminary 177 per cent of the 1936-1939 average. Thus, the last full pre-holiday week maintained the high tempo of production that has characterized the last quarter of this year and matched the performance of the preceding week.

STEEL—After two weeks' operation at 100 per cent of capacity, production of steel for ingots and castings declined slightly to 99.5 per cent of capacity in the week ended Dec. 18. The weekly production average for the fourth quarter to date has been 98.9 per cent of capacity.

AUTOMOBILES—Also closing out the year with a high production fourth quarter, the automobile builders turned out 125,452 passenger cars and trucks in the week ended Dec. 18 and set a new postwar record. A falling off in production is seen for the last two weeks of the year as the automobile builders revert to 4-day operations for the holidays. Industry predictions for 1949 are that some 4,600,000 passenger cars may be completed in U.S. and Canadian plants, well above the 1948 total but short of the 4,794,898 units produced in 1929.

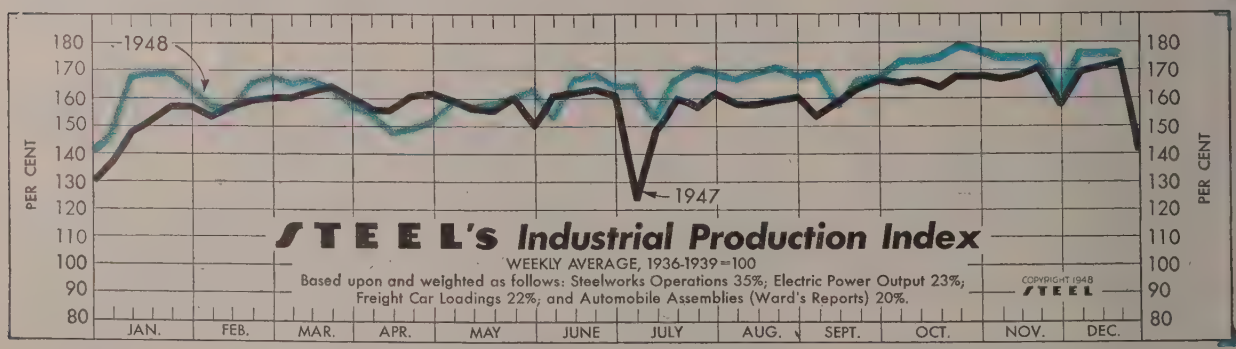
TRUCKLOADINGS—Reports from 300 motor carriers in 38 states to the American Trucking Associations show that the upward trend in truckloadings continued through October. Volume of freight transported during the month was 3,086,513 tons, an increase of 2.2 per cent over September and 1.8 per cent over October, 1947. Carriers of iron and steel hauled about 4 per cent of the total tonnage, showing an increase of 7.4 per cent over September.

POWER—Electric energy distributed in the week ended Dec. 18 topped 5.79 billion kilowatt-hours and set still another postwar record. For the past few months new marks have been set in the industry almost every week and are expected to continue climbing as more generating facilities become available.

PRICES—Average primary market prices were 0.4 per cent lower in the week ended Dec. 14 than in the preceding week, according to the Bureau of Labor Statistics. The index for the week was 163 per cent of the 1926 average, 0.8 per cent lower than four weeks earlier and only fractionally higher than the same week in 1947.

COAL—Bituminous coal production in the week ended Dec. 11 was 11,890,000 net tons, about 1.5 million tons below the aggregate for the corresponding week last year. Bituminous output for the year is about 6 per cent below that for the corresponding period last year while output of Pennsylvania anthracite is only 0.4 per cent below the corresponding 1947 total.

RAILROADS — Total rail operating revenues for November were up 8.1 per cent over the corresponding month last year, according to an estimate by the Association of American Railroads. Freight revenues during the month were 9.2 per cent greater than in November, 1947, but passenger revenues decreased 0.2 per cent.



Index (chart above): Week ended Dec. 11 (preliminary) 177 Previous Week 177 Month Ago 171 Year Ago 173

BAROMETERS of BUSINESS

INDUSTRY	Latest Period*	Prior Week	Month Ago	Year Ago
Steel Ingot Output (per cent of capacity)†	99.5	100.0	99.0	97.5
Electric Power Distributed (million kilowatt hours)	5,790	5,705	5,627	5,368
Bituminous Coal Production (daily av.—1000 tons)	1,982	1,892	1,971	2,235
Petroleum Production (daily av.—1000 bbl.)	5,645	5,620	5,659	5,284
Construction Volume (ENR—Unit $1,000,000)	$146.2	$83.7	$123.2	$130.1
Automobile and Truck Output (Ward's—number units)	125,452	124,041	120,718	120,657

* Dates on request. † 1948 weekly capacity is 1,802,476 net tons. 1947 weekly capacity was 1,749,928 net tons.

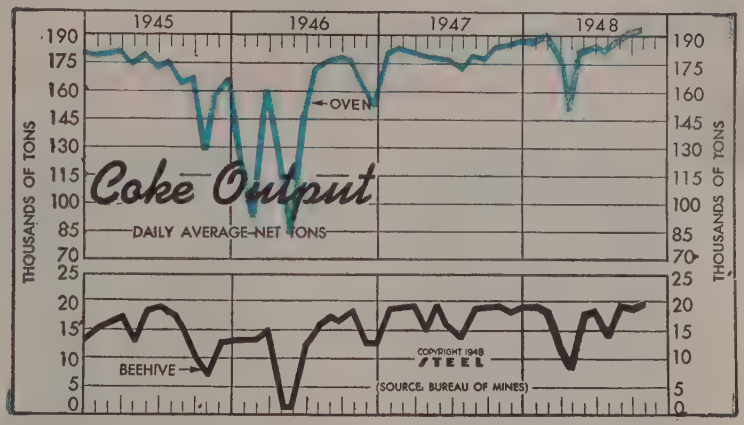
TRADE				
Freight Carloadings (unit—1000 cars)	780†	783	857	832
Business Failures (Dun & Bradstreet, number)	96	122	126	91
Money in Circulation (in millions of dollars)‡	$28,369	$28,415	$28,215	$28,923
Department Store Sales (changes from like wk. a yr. ago)‡	−1%	−5%	−9%	+10%

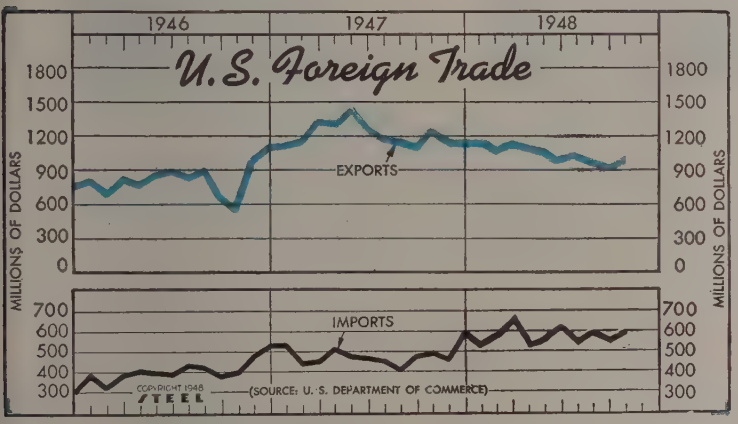
† Preliminary. ‡ Federal Reserve Board.

Coke Output

Bureau of Mines
(Daily Average Net Tons)

	Oven		Beehive	
	1948	1947	1948	1947
Jan.	189,191	181,245	19,554	18,124
Feb.	190,098	183,189	18,596	18,372
Mar.	182,340	182,529	10,458	18,725
Apr.	149,692	179,428	8,205	14,591
May	184,568	179,400	18,623	19,800
June	186,425	178,400	18,002	15,700
July	184,286	174,300	14,036	14,100
Aug.	188,468	181,697	19,749	18,346
Sept.	192,090	179,872	19,616	19,800
Oct.	192,440	187,009	19,947	20,200
Nov.	.....	188,342	.....	18,316
Dec.	.....	189,886	.....	19,454
Ave.	.....	182,108	.....	17,961





Foreign Trade

Bureau of Foreign and Domestic Commerce
(Unit Value—$1,000,000)

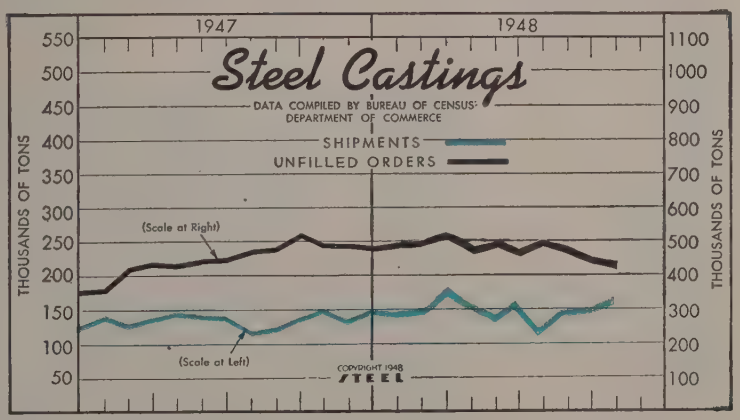
	Exports			Imports		
	1948	1947	1946	1948	1947	1946
Jan.	1,091	1,114	798	546	531	394
Feb.	1,086	1,146	670	582	437	318
Mar.	1,141	1,327	815	666	444	384
Apr.	1,123	1,299	757	527	512	406
May	1,103	1,503	851	549	474	393
June	1,013	1,320	878	616	463	382
July	1,022	1,265	826	559	450	431
Aug.	988	1,265	883	598	400	422
Sept.	926	1,109	643	558	481	377
Oct.	1,021	1,235	536	597	492	394
Nov.	....	1,138	986	...	454	478
Dec.	....	1,112	1,097	...	601	529

Steel Castings

(Net tons in thousands)

	Shipments		Unfilled Orders*	
	1948	1947	1948	1947
Jan.	141.1	139.0	491.7	365.5
Feb.	142.4	125.6	497.1	421.4
Mar.	162.9	134.9	508.8	434.9
Apr.	150.3	144.2	472.4	427.6
May	143.3	140.9	482.5	443.2
June	152.9	139.0	470.0	445.5
July	120.4	117.0	497.4	473.9
Aug.	140.2	120.4	472.5	478.6
Sept.	149.2	137.4	448.0	526.2
Oct.	153.6	148.4	424.4	497.3
Nov.	....	130.1	....	493.3
Dec.	....	148.1	....	489.4

* Castings for sale.



FINANCE

	Latest Period*	Prior Week	Month Ago	Year Ago
Bank Clearings (Dun & Bradstreet—millions)	$14,853	$15,665	$13,423	$14,001
Federal Gross Debt (billions)	$252.2	$252.4	$252.5	$257.0
Bond Volume, NYSE (millions)	$17.8	$16.6	$16.3	$37.2
Stocks Sales, NYSE (thousands)	5,479	6,281	5,176	6,942
Loans and Investments (billions)†	$62.6	$62.3	$62.4	$65.1
United States Gov't. Obligations Held (millions)†	$33,179	$33,075	$33,319	$37,564

† Member banks, Federal Reserve System.

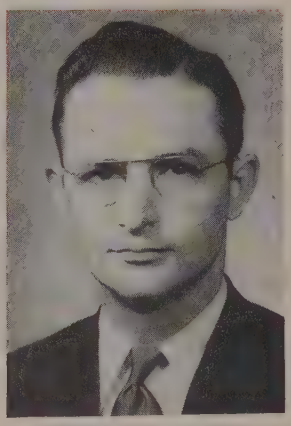
PRICES

STEEL's composite finished steel price average	$95.50	$95.50	$95.50	$76.09
STEEL's Nonferrous Metal Composite‡	232.6	232.6	232.3	181.1
All Commodities†	163.0	163.7	164.3	162.6
Metals and Metal Products†	173.8	173.8	173.1	151.0

† Bureau of Labor Statistics Index, 1926=100. ‡ 1936-1939=100.

Men of Industry

JOHN H. O'CONNELL



CHARLES D. EICHORN

SIDNEY A. WHITT

John H. O'Connell has been appointed public relations director, ATF Inc., Elizabeth, N. J. He had been associated with Curtiss-Wright Corp. for seven years before joining ATF, and was public relations manager of its wartime plant at Beaver, Pa., and later of its Propeller Division at Caldwell, N. J., and more recently assistant to the vice president in charge of public relations for all divisions of the corporation.

—o—

John A. Sargent has been elected executive vice president of Diamond Alkali Co., Cleveland. He has held the post of vice president of finance since 1947. Mr. Sargent joined the company in 1946 as its treasurer. He at one time held the position of vice president and general sales manager, Campbell Metal Window Corp., formerly a subsidiary of American Radiator & Standard Sanitary Corp. When Campbell merged in 1939 with Truscon Steel Co., subsidiary, Republic Steel Corp., Mr. Sargent became a sales manager of the Truscon organization.

—o—

Charles T. Perkins, former vice president in charge of engineering, Modine Mfg. Co., Racine, Wis., manufacturer of automotive radiators and heating and air conditioning equipment was elected president to succeed the late **Walter C. Winkel. Arthur F. Thompson** was named executive vice president; **Arthur G. Dixon,** secretary, was named vice president and secretary; and **G. H. Jackson,** vice president-purchasing, was named a director to fill the unexpired term left by the death of Mr. Winkel.

—o—

John C. Keplinger, vice president in charge of sales, Hercules Motors Corp., Canton, O., was promoted to executive vice president of the company. He will continue to direct the sales activities of the company.

—o—

Charles D. Eichorn has been appointed sales representative of the New York branch of the Berger Mfg. Division, Republic Steel Corp., Cleveland. He became associated with Berger in 1947 in the locker sales department in Canton, O.

—o—

James W. Moran has been elected president, Baker-Raulang Co., Cleveland, to succeed **E. J. Bartlett,** who will become president emeritus and continue as a director. The change will be effective Jan. 1. Mr. Moran joined the company in 1911. In 1920 he was elected assistant treasurer, and in 1934, secretary, treasurer and director.

—o—

Norman C. Michels has been appointed manager of operations of Laclede-Christy Co., St. Louis, and its subsidiaries. In this capacity he will have complete charge of all manufacturing and mining operations. He had previously been chief engineer for the company. Mr. Michels joined Laclede-Christy after being associated with the engineering staff of Carnegie-Illinois Steel Corp.

—o—

Byers Machine Co., Ravenna, O., manufacturer of power shovels, cranes, draglines and back hoes, announces appointment of **John F. Van Way** as Midwest district sales manager with offices at St. Louis. For the past eight years he has been connected with the heavy construction equipment field, and prior to joining Byers, Mr. Van Way operated his own firm, Service Construction & Industrial Equipment Co., St. Louis. **R. E. Boehck,** formerly Byers district sales manager in the Midwest and Southwest areas, will now concentrate in the Southwest territory, with headquarters at Houston, Tex.

—o—

Sidney A. Whitt has been elected vice president of engineering, Cordley & Hayes, New York. He has been director of engineering for the past four years. Mr. Whitt has contributed many developments and inventions to the refrigeration and air conditioning industry. Before joining Cordley & Hayes he served in engineering and technical executive capacities with York Corp., Nash-Kelvinator Corp., Fedders Mfg. Co. and Baker Ice Machine Co.

—o—

J. Wesley Cable, formerly director of research and sales of Induction Heating Corp., New York, has opened offices as a consultant to the high frequency heating field. He will specialize in both induction and dielectric heating, and will offer complete engineering and design service to industry. His offices are located at 325 East 41st St., New York.

—o—

Wolverine Tube Division, Calumet & Hecla Consolidated Copper Co., Detroit, announces appointment of **A. M. Younger,** formerly general manager for Atlas Mineral Products Co., as manager of southwestern sales for the division. He will have headquarters at Houston, Tex. Mr. Younger succeeds **L. G. Fox,** who has developed Wolverine operations in the southwest territory, and who has returned to the company's Detroit of-

TINNERMAN
Speed Nut
SAVINGS STORIES

"Saved—$50,000 EQUIPMENT INVESTMENT ...Thanks to SPEED NUTS*"

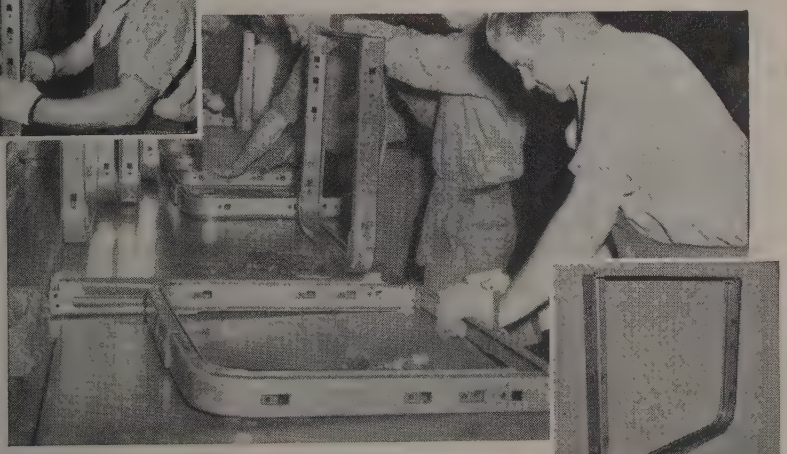
REPORTS MR. GEO. W. McINTYRE,
Sales Engineer, Walway Co., Detroit, Mich.

"Recently, a well-known automobile manufacturer asked us to estimate the cost of supplying radiator core supports for his 1949 models complete with welded nuts. Since we had no automatic welding equipment of the type required and were a considerable distance from the nearest source of high-voltage power, our investment in wiring and equipment would have been $50,000.00!
"With the help of Tinnerman engineers, we submitted an alternate estimate based on the use of heavy-duty, self-retaining 'U'-type SPEED NUTS. The customer accepted this proposal, gaining a 42.3% cost reduction over the welded-nut method . . . and saving the entire equipment investment."

In analyzing your production costs, remember that SPEED NUTS can save money for you, too. Write for details on our Fastening Analysis Service or contact your Tinnerman representative, listed in major city telephone directories. Tinnerman Products, Inc., Cleveland 13, Ohio.

In Canada: Dominion Fasteners Limited, Hamilton
In England: Simmonds Aerocessories, Ltd., Treforest
In France: Aerocessoires Simmonds, S. A. Paris

Close-up shows heavy-duty "U"-type SPEED NUTS being slipped into bolt-receiving position by hand.



On the Walway assembly line, above, assemblers are attaching 21 "U"-type SPEED NUTS to each radiator core support. Completed product, right, is ready for final front fender, apron and radiator assembly.

TINNERMAN Speed Nuts
*Trade Mark Reg U S Pat Off
MORE THAN 4000 SHAPES AND SIZES

fice to assume special assignment duties. Another member of the Wolverine organization, **J. L. Young Jr.**, will have headquarters at the Houston office, and with **A. S. Williams**, in the Dallas office, will represent Wolverine throughout Texas, Oklahoma, Arkansas and Louisiana. Mr. Young joins the company after association with Kelly-Springfield Tire Co.

—o—

Cincinnati Milling Machine Co., Cincinnati, announces several promotions: **David M. Strauchen,** general shop superintendent, was named manager of the Special Products Division. **George W. Binns,** with the company since 1913, was promoted to manager of the Development Division. **Alfred T. Blackburn** succeeds Mr. Strauchen as general shop superintendent, and **Fred W. Miller** was named assistant. **John B. Elfring,** head of tool design, was shifted to manager of production control and his former place was given to **Harold W. Thomas.** New division superintendents include: **Clyde R. Eby, Phil Geier Jr., Edgar L. Routzong** and **Neil Allstatt.**

—o—

Col. William L. Norvell has been appointed sales manager, vericon television department, Remington Rand Inc., New York. He will divide his time between the Remington Rand Laboratory of Advanced Research, South Norwalk, Conn., and the company's head offices in New York.

—o—

Holcroft & Co., Detroit, designer and builder of mass-production heat treat furnaces, announces appointment of **Ruel T. Cadwell** as president. Mr. Cadwell has been active in the company since its incorporation, and was formerly secretary-treasurer. **Charles T. Holcroft,** founder of the company and its president since 1917, remains with the company as secretary and consultant on problems of furnace design. Other recent appointments include **Walter H. Holcroft** as executive vice president; **C. H. Martin** as vice president in charge of the Chicago office; **Robert H. Cadwell** as treasurer; and **A. W. Criger** as assistant secretary.

—o—

New York & New Jersey Lubricant Co., New York, has announced the election of **Ivan L. Hall** as vice president, **Sidney Vollman** as treasurer, **James F. Donlin** as assistant treasurer, and **Harry Clemens** to the board of directors. All of the newly elected officials have been associated with the company for 40 years or longer.

—o—

Truscon Steel Co., Youngstown, announces that **C. B. McGehee,** after a year's leave of absence, has returned to assume the responsibilities of his former position as general manager of sales.

—o—

Phelps Dodge Copper Products Corp., New York, announces that three executives of the corporation have been elected vice presidents. They are **Henry L. Marion, Edgar P. Dunlaevy** and **Weightman Edwards.** Both Mr. Dunlaevy and Mr. Edwards have held positions in the sales department of Phelps Dodge Copper Products Corp. for a number of years, while Mr. Marion has been engaged in production control and co-ordination of operations as direct assistant to **Wylie Brown,** president of the firm.

—o—

William C. Jordan, vice president and general manager of Wright Aeronautical Corp., subsidiary of Curtiss-Wright Corp., at Paterson, N. J., has been elected president and director of both companies. **Guy W. Vaughn,** president, Curtiss-Wright since 1935, becomes chairman of the board. H has also been president of Wrigh Aeronautical Corp. since 1930, and re tains the chairmanship of that sub sidiary company. **Paul Shields,** a di rector of Curtiss-Wright, and senio partner of the investment bankin firm of Shields & Co., has been name chairman of the executive committe of Curtiss-Wright.

—o—

Kennametal Inc., Latrobe, Pa., manu facturer of cemented carbide tool announces the appointment of **Rober Hutchinson** as an application engi neer in the central district. Hi headquarters will be at the Clevelan office, 860 Hanna Bldg.

—o—

E. L. Carlotta has been appointed re search and development engineer fo rubber products, Parker Applianc Co., Cleveland. He joined the com pany in 1941, and in 1945 was name superintendent of rubber productio Parker Special Products Division.

—o—

R. S. Wiltrout has been elected presi dent, Prentiss Wabers Products Co Wisconsin Rapids, Wis., succeedin the late **Charles F. Kruger.** In activ charge of the company's operation for the past 25 years, Mr. Wiltrou will retain the title of general man ager in addition to his new duties a president. The office of treasure formerly held by Mr. Wiltrout, wa combined with the secretary, and th joint position will be occupied b **A. E. Bark,** who previously served a secretary. **T. W. Brazeau** was elec ted to the board to succeed M Kruger.

—o—

E. S. Holt has been named branc manager of the Manufacturing & Re pair Division at Westinghouse Elec tric Corp.'s Emeryville, Calif., plan

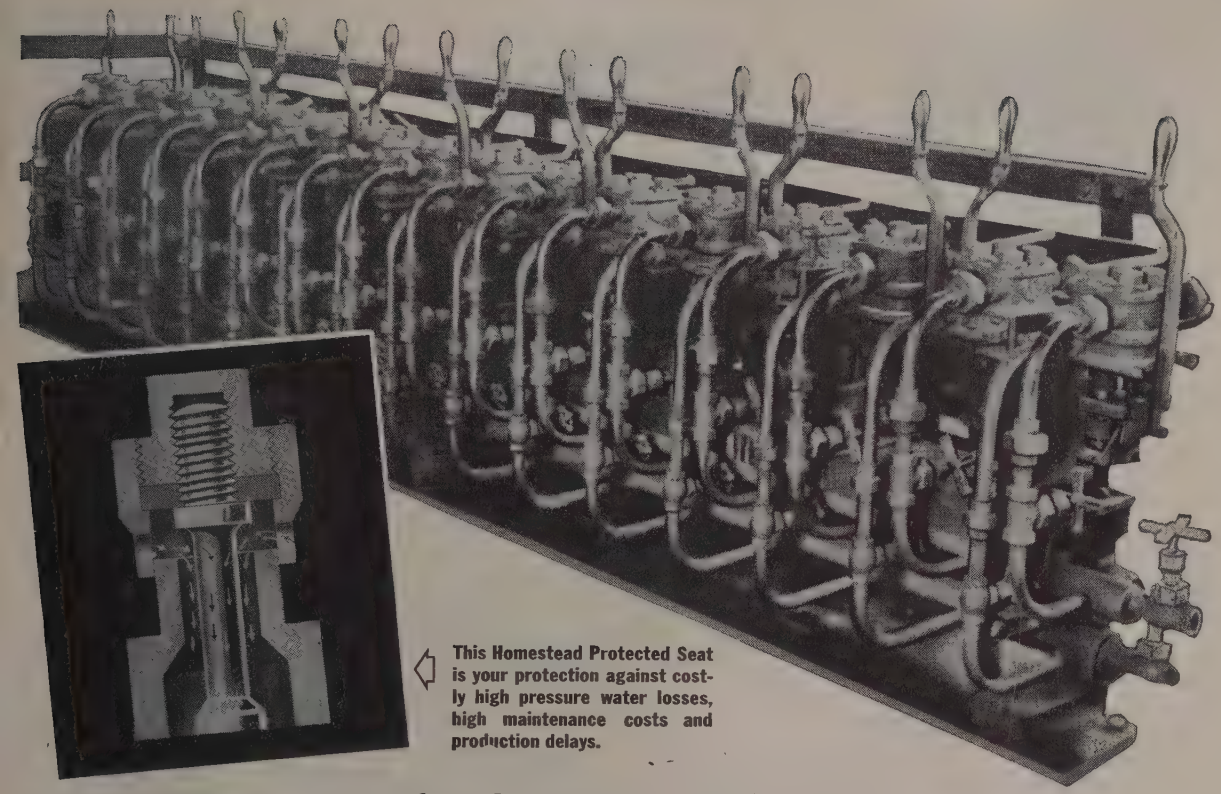
—o—

American Metallizing Contractor

HENRY L. MARION

EDGAR P. DUNLAEVY

WEIGHTMAN EDWARDS



This Homestead Protected Seat is your protection against costly high pressure water losses, high maintenance costs and production delays.

Increase Production and Tonnage . . .
Reduce Shutdowns
with

HOMESTEAD

PROTECTED SEAT
HYDRAULIC OPERATING VALVES

Fast, easy, smooth, and "on the nose" control of manipulators, shears, stampers, presses, and other production machinery, is assured when operated by HOMESTEAD PROTECTED SEAT HYDRAULIC OPERATING VALVES. Built right into each valve is the HOMESTEAD PROTECTED SEAT consisting of a closely fitted sleeve and inside plunger, which reduce fluid flow to a dribble while seat and disc are still widely separated. "Wire drawing" or cutting of the seat, and leakage are eliminated. Production and tonnage are increased; and maintenance is so low that records of twelve to eighteen months continuous service without so much as the replacement of a fibre disc are common.

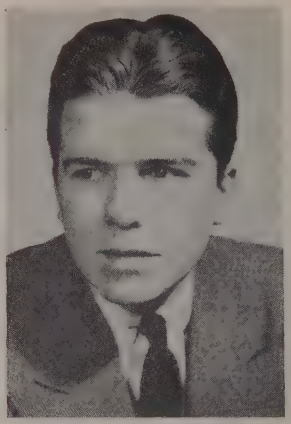
HOMESTEAD PROTECTED SEAT HYDRAULIC OPERATING VALVES are made in 3-way or 4-way types; or in single poppet types to control hydraulic spray for descaling; sizes $\frac{1}{2}$" to 4", hand operated or remote control, for pressures up to 3000 pounds.

Write today for complete details and copy of Valve Reference Book No. 38.

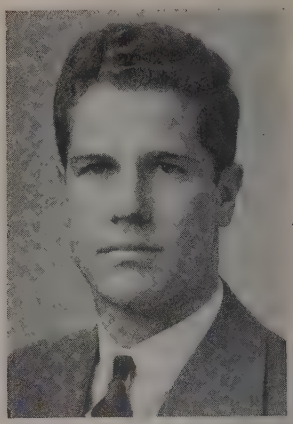
HOMESTEAD VALVE MFG. CO.

P. O. BOX 22 CORAOPOLIS, PENNSYLVANIA

ROGER HUBBELL



DAN J. CANTILLON



WILLIAM H. NORTH

Association, which held its annual meeting at Tulsa, Okla., Dec. 2, 3, and 4, has elected **Peter G. Dennison,** president, **K. B. Smith,** vice president, and **Walter B. Meyer** was re-elected secretary-treasurer. Mr. Dennison is president and founder of the Metal Spraying Corp., Milwaukee. Mr. Smith is vice president and general manager of the Dix Engineering Co. Inc., Lincoln Park, Mich.

—o—

Roger Hubbell has been appointed district sales engineer for Threadwell Tap & Die Co., Greenfield, Mass., subsidiary, Sheffield Corp. He will cover the New England territory. Mr. Hubbell had many years of experience in the industry. He will make his headquarters at Needham, Mass.

—o—

Syntron Co., Homer City, Pa., manufacturer of vibratory material handling equipment and power tools, announces the following additions to its sales personnel and establishment of new sales offices: **Mark Chisholm** has been appointed district sales manager of the newly established sales office in Des Moines, Iowa. **Ernest K. Hood** is the district sales manager of a new sales office in Kansas City, Mo. **R. K. Bentzien** has been added to the Milwaukee sales office staff, taking charge of power tool and paper jogger sales.

—o—

Alabama Newcomen recently honored Tennessee Coal, Iron & Railroad Co., and its president, **Robert Gregg,** at a dinner at Mountain Brook Club, Birmingham. **Thomas W. Martin,** Alabama Newcomen Committee chairman, presided.

—o—

Dale Kramer, who has been on leave of absence from B. F. Goodrich Co., Akron, since last March, has rejoined the company and has been assigned to the auto and home supply department. Before his leave Mr. Kramer was director of field sales personnel. **Robert L. Reeves** has been appointed manager of the store merchandising for Goodrich. He has been manager of sales planning in the Replacement Tire Sales Division for the past two years.

—o—

Ferry Cap & Set Screw Co., Cleveland, announces the following promotions: **Dan J. Cantillon,** for the past three years sales engineer, industrial sales department, has been promoted to assistant manager, industrial sales. He had previously served in the production department of the company. **William H. North,** previously distributor sales representative, has been promoted to assistant to the president. Previous to joining Ferry Cap three years ago, he was sales representative for Charles H. Phillips Chemical Co., followed by service in the Army during the war. **F. A. Schmiedt** and **F. A. Perko** have been named manager of office sales, and assistant controller, respectively. Both of these men have been with the company for several years.

—o—

Alexander S. Keller, vice president and manager of foreign sales, Pratt & Whitney, Division of Niles-Bement-Pond Co., West Hartford, Conn., has been appointed senior industry officer in the Netherlands Mission of the Economic Cooperation Administration. The company is granting Mr. Keller a leave of absence for approximately a year to permit him to take up this assignment. In the capacity of senior industry officer, Mr. Keller will be the representative of the United States government under **Dr. Alan Valentine,** Chief of Mission, and president of the University of Rochester, and it will be Mr. Keller's duty to administer the industrial phases of the ERP or Marshall Plan in the Netherlands and Netherlands Indies. He will leave for the Hague, presumably, at the end of January.

—o—

Philip H. Clapp Jr., formerly sales representative, has been appointed sales manager of the Engineered Castings Division of American Brake Shoe Co., at Rochester, N. Y. He has been with the company since 1946, following service with the U. S. Navy during the war, and will continue to be located at the division's headquarters in Rochester.

—o—

John H. Reock, formerly assistant sales promotion manager of the Iron Fireman Mfg. Co., Cleveland, has been appointed assistant to the sales manager of L. J. Mueller Furnace Co., Milwaukee.

—o—

Robert Schomann, Reinke & Schomann Inc., was elected president of the Milwaukee Sheet Metal Contractors' Association.

—o—

Arthur R. Munson has resigned as general sales manager of Lisk-Savery Corp., Buffalo, to become director and sales manager of Lord-Tabor Co. Inc., Canandaigua, N. Y. His duties at Lisk-Savory have been assumed by **Lyndon Wilson,** vice president in charge of sales.

—o—

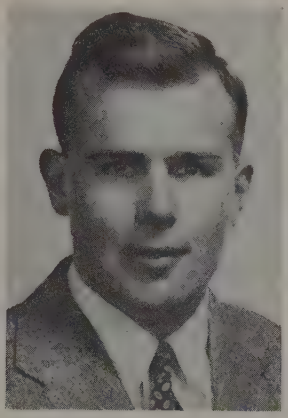
Raymond H. Kelley has been placed in charge of the recently opened office of the Heating Division, Fedders-Quigan Corp., Buffalo. The new office is located in the Madison Terminal Bldg., at Clinton and Madison Sts. in Chicago. All products of the Heating Division, including horizontal and downblow unit heaters as well as convectors for household, commercial and railroad car use, will be handled.

—o—

John D. Anderson has been appointed superintendent of the rod, wire and

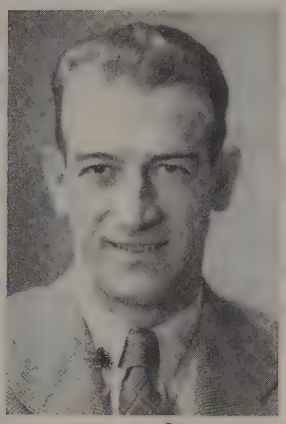
E. P. WALTERS

ppointed district manager at St. Louis, Chiago Vitreous Enamel Product Co. Noted in STEEL, Nov. 29 issue, p. 72



C. P. CRYER

Appointed manager, Baltimore office, Machinery Division, Dravo Corp., Pittsburgh. Noted in STEEL, Nov. 29 issue, p. 68



CORNELIUS VAN DEUSEN

Appointed assistant sales manager, V & O Press Co. Inc., Hudson, N. Y. Noted in STEEL, Dec. 20 issue, p. 78

onduit departments at the Struthers, O., plant, Youngstown Sheet & Tube Co., Youngstown. He joined the company in 1926 as an inspector in the sheet galvanizing department. Since 1944 he has been assistant superintendent of the Struthers merchant mills.

—o—

Ralph O. Smith, general sales manager, Vulcan Iron Works, Wilkes-Barre, has resigned that position to accept the presidency of the Wilkes-Barre Iron Mfg. Co., Wilkes-Barre, Pa.

—o—

W. J. Arris, who joined Burroughs Adding Machine Co. in Manchester, England, in 1926, has been appointed to the newly created post of general manager of the European operations of the company. Mr. Arris will make his headquarters in London.

—o—

Louis G. Pacent Jr. has been elected vice president in charge of manufacturing of Radio Speakers Inc., Chicago, a subsidiary of Emerson Radio & Phonograph Corp.

OBITUARIES . . .

Bert T. Wagner, 65, for many years associated with the steel industry, died recently at his home in Cleveland. During the first quarter of the century Mr. Wagner was a plant executive for Bourne-Fuller Co., and after its absorption into Republic Steel Corp., he entered the steel plant construction and repair business, in which he remained until the World War II period. During the war he was a steel analyst for the War Production Board.

—o—

Robert T. Kain, manager of the Dallas district, Industrial Products Sales Division, B. F. Goodrich Co., died of a heart attack recently.

—o—

Howard E. Stoll, 70, manager of rail sales for Bethlehem Steel Co., Bethlehem, Pa., from 1928 until his retirement in 1943, died Dec. 14.

—o—

John S. Oursler, 80, who retired in 1930 as vice president, Carnegie Steel Co., Pittsburgh, died recently at his home in Miami, Fla. Mr. Oursler spent 42 years in the steel industry, most of that time with Carnegie Steel. He resigned owing to ill health.

—o—

Charles T. Schwab, 45, assistant to the vice president at the Midland, Pa., Works of Crucible Steel Co. of America, died of a heart attack at his home in Beaver, Pa., Dec. 11. He had been associated with the steel business since 1925, and joined Crucible Steel as assistant to the vice president at Midland 2½ years ago. He previously was with McLouth Steel Co., Detroit, and had association with a number of other steel companies.

—o—

Emmett N. Owens, assistant chief inspector, Ensley Steel Works, Tennessee Coal, Iron & Railroad Co., Birmingham, died Dec. 11.

—o—

George F. Goddard, 68, retired senior salesman, Carnegie-Illinois Steel Corp., at Boston, died Dec. 16. He began his career in the Boston sales office, where he remained until his retirement in 1945. He spent 42 years with the company.

—o—

Vincent E. Crawford, 55, an executive for more than 20 years for Thompson Products Inc., Cleveland, and for two of its subsidiaries, died Dec. 19. In 1919 he was sent by Thompson Products to be general manager of its Toledo Steel Products Co., Toledo, O. Ten years later he was made vice president and general manager, Thompson Products Co. Ltd., St. Catherines, Ont. In 1947 he left Thompson to become general manager, Montjoy Parts Co., San Antonio, Tex., and later became president, treasurer and general manager, Stewart Auto Supply Co., Niagara Falls, N. Y.

—o—

Chauncey P. Goss Jr., 69, vice president, Scovill Mfg. Co., Waterbury, Conn., died Dec. 19 after a long illness. He also was a director of the company and superintendent of its mills department.

—o—

Bertel K. W. Budtz, 46, manager of activities in the southeastern section of the Caribbean area for the Western Electric Co., New York, died at his home in Port-of-Spain, Trinidad, Dec. 14.

—o—

Warren D. Brinton, 80, former assistant controller in charge of manufacturing accounting for International Harvester Co., Chicago, died Dec. 10 at his home in Milwaukee. He was employed by the Harvester company for 27 years.

—o—

Clifford V. Williams, 51, general sales manager, Delco Products Division, General Motors Corp., died Dec. 16 at Dayton, O.

Many Cranes Can Be Controlled to Advantage from the Floor

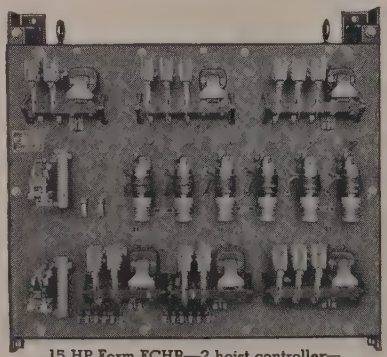
THIS EC&M Control for **floor-operated** cranes has all the advantages of the well known EC&M Control for **cab-operated** cranes. A single pendant master-station, with two Push Buttons for each motion, makes possible the control of all crane movements. Individual rope-operated Master Switches can be had if desired.

Among the advantages of this standardized line of controllers are (1) accurate inching, (2) compact mounting, and (3) minimum collector-bar requirements. They can be conveniently installed along the crane girders or mounted on the trolley.

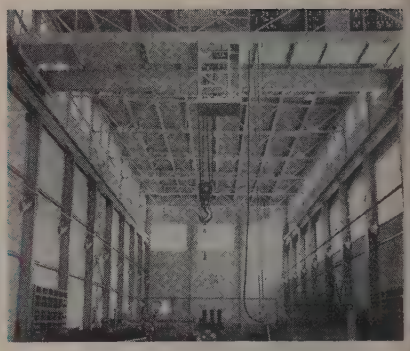
Resistors are carefully proportioned for low-torque hoisting of light loads and also provide smooth acceleration for bridge and trolley.

Send for Bulletins 922 (D.C.) and 931 (A.C.) which illustrate and completely describe these units.

Form FCR Controller for trolley or bridge motion —for direct current floor-operated cranes.

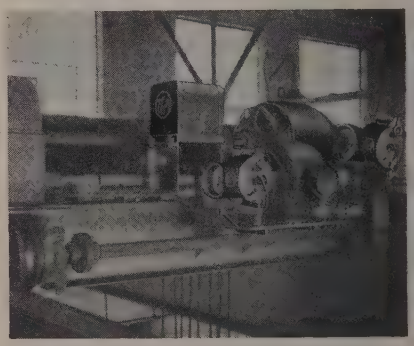


15 HP Form FCHR—2 hoist controller—for a.c. floor-operated crane.



Overhead traveling crane installed in diesel railroad locomotive maintenance shop. EC&M Magnetic Controllers for hoist, bridge and trolley motions are mounted along the crane bridge walkway.

This crane is normally operated from the floor level where operator has a close view of the work performed. Pendant push button station can be pulled up into the crane cab when overhead operation is desired.



Complete control including brakes and limit stop was supplied by EC&M for this crane. On the crane trolley above are shown the EC&M Bulletin 1006 Type WB Brakes on the hoist and trolley motors and EC&M Bulletin 1032 Youngstown Safety Hoist Limit Stop as a final check against overhoisting accidents.

THE ELECTRIC CONTROLLER & MFG. CO.
2698 EAST 79th STREET • CLEVELAND 4, OHIO

Advertisement

Engineering News . . . AT A GLANCE

JAWS WITH VELVET GRIP— An answer to the problem of chuck marks on soft metals now is provided in the form of plastic soft-jaw blanks currently being made up for Gisholt Machine Co., Madison, Wis. The material is said to distort a thin-wall piece less than soft metal jaws, its friction coefficient being 2½ times that of soft steel under the same pressure. Blanks perform well in first operation work on soft metals like aluminum and brass, and for second operations on thin-wall pieces or jobs on which chucking marks should be avoided.

MIRROR-FINISHES IN SECONDS— Aluminum and its alloys in wrought forms may be mirror-brightened en mass in a matter of seconds by a chemical treatment currently offered by Colonial Alloys Co., Philadelphia. Small parts such as stampings, pressings, drawings, extrusions etc., are chemical brightened by dipping the cleaned work, in baskets, into a hot chemical-polishing solution for about 5 to 60 seconds. If surfaces are to be protected still further, a second treatment developed by the company increases the corrosion resistance values of the metals. Latter also is reported to make an excellent base for paints, rendering the aluminum smudge-proof for handling and storing.

WICKET-HOLE-FED FURNACES— To boost output of stainless steel at the South Works of Carnegie-Illinois Steel Corp., Chicago, oxygen is supplied the shops through a 2½-inch line from the plant dry-oxygen station. Maximum flow is 15,000,000 cubic feet per hour per outlet at a line pressure of 120 pounds. The gas, however, is introduced into the electric furnace by lance through the wicket holes of the doors, the end of the lance penetrating the slag surface but not in the middle of the bath. The oxygen thus impinges on the metal at the slag-metal interface.

HIGH-VACUUM BRAZING— High vacuum now is being applied to brazing of large components through use of a high-vacuum brazing furnace in the research division of Collins Radio Co., Cedar Rapids, Iowa. In the furnace, built by National Research Corp., Cambridge, Mass., brazing operations take place at pressures less than one micron—1/760,000th of normal atmospheric pressure. This almost total absence of air permits brazing with virtually no oxidation. Components processed are those of Resnatrons—a large power tube designed for generating many kilowatts of continuous power at microwave frequencies.

MORE POWER PER POUND— Major component of a new jet and turboprop self-starter system—a small gas turbine weighing 88 pounds — developed by the Navy Bureau of Aeronautic and AiResearch Mfg. Co., Los Angeles, may also be adapted for ground sources of auxiliary power and industrial applications. According to the Navy, a turbine principle is involved which is destined to provide more power for weight and size than previous power plants. The turbine is said to represent the first "radial inward flow" power unit. Although such turbines have been used with water or steam, this is the first successful air or gas type. Thus far two versions of the diminutive gas turbine have been developed. With reduction gearing, both can be used to drive all electrical equipment and other power-consuming accessories.

"HIGH-HAT" HANDLING — Besides avoiding necessity of handling individual wire coils in the head room, the "high-hat" technique of handling wire at Lamson & Sessions, Cleveland, also eliminates scrapping coil ends when running wire into machines. The "hats," which are delivered to the machines by monorail, are made up of about 1500 pounds of wire. They are made up on a gravity conveyor by a crane hoist that strips the drawn wire from a block. As each "hat" is completed, it continues down the conveyor which "spots" it under the monorail system. (p. 54.)

MAKES DEEP PENETRATIONS— Submerged melt welding, though usually applied automatically, differs from most automatic joining. In the process a bare rod is employed and the granular material is separately applied to cover the end of the welding rod and molten puddle. Part of this composition melts in the welding heat and submerges the end of the rod and the fluid weld metal—a factor that makes possible the use of high current densities and provides a complete liquid shield beneath the granular material. No arc and usually no flash is visible. (p. 58)

SINGLE-SLAG PRACTICE — One of the important methods of production in the electric furnace is the so-called single-slag practice wherein oxidizing slag conditions similar to open hearth practice are maintained. Walter M. Farnsworth of Republic points out that a considerable tonnage of rimmed, semikilled and fully killed steels have been produced by this method with very good results. These are open hearth grades of steel that do not require superelectric furnace refining—that is, the slag-off and refining period is eliminated. (p. 76)

ONE PER CENT ERROR — Fatigue data accurate within 1 per cent error are provided by a rotating beam tester developed by Hunter Spring Co., Landsdale, Pa. Units design involves looping a sample of predetermined length through a complete 180 degrees so that the bending stress can be perfectly predicted, simply calculated, and brought to as great a value as desired to hasten specimen failure. (p. 90)

By DAN REEBEL
Associate Editor, STEEL

Effective Handling

...boosts pickling production

Material is handled completely through storage, pickling, annealing, drawing and delivered to cold heading machines without an operator's hand touching the work

ELIMINATION of practically all manual labor together with greatly increased production and lowered operating costs is being afforded Lamson & Sessions Co., Cleveland, by operation of their new ultra-modern rod and wire, pickling and drawing division recently put into operation. Designed by the company's operating officials and engineers, the new layout embodies the most up-to-date methods of materials handling, waste acid disposal and continuous operational flow, requiring a minimum of material back tracking during processing.

From initial wire storage through pickling, liming, washing, annealing to the final drawing, all material is rigorously kept segregated by manufacturer's heat numbers because every bolt and fastener must meet the exacting physical tests required after heat treatment. It is hard to believe that 1200 pound coils of rod from No. 10 to 0.750 inch diameter are handled completely through all operations up to heading machines virtually without an operator's hand touching the material.

However, such is the case in this plant and the resultant lowered worker fatigue, lessened hazard and higher per man output attest to the company's foresight in developing and erecting this costly unit. In the pickling and liming division, one operator working a single eight-hour shift is able to meet the production demands for pickled rods for wire drawing and cold heading at the two Cleveland plants and part of a third plant located out of the area. The accompanying photographs show some of the material handling innovations and engineering ingenuities that are helping to achieve the above mentioned results.

As raw material in the form of steel rod arrives at the plant, the traffic department notifies the wire drawing department and subsequently informs the railroad of the place to spot the car. Upon the car's arrival, a craneman rough checks the material against the bill of lading by climbing into the car to personally identify and acquaint himself with the size, heat and arrangement of material within the car. Samples are then sent to the metallurgical laboratory with an identification and work order attached. Checks are made for analysis, type, segregation and seams. Steels of the SAE 1035 and 1038 type are checked for oil or water quench type steel. All material is held in storage pending final laboratory reports.

Spark Testing Utilized—For handling material in and out of storage, an ingenious type "hairpin" hook is utilized on a bridge crane. It is almost unbelievable the way the operator can handle his load of as much as 3500 pounds—picking it up and maneuvering it such as a child would handle his favorite toy. The main storage area at the plant is approximately 360 feet long having 11,880 square feet of floor area. The floor clerk at the receiving area performs his spark testing at this time. Tags are again checked for heat and size and coils are then counted and tallied.

Raw material requisitions are written from the drawing schedule for use of the cranemen in withdrawing the proper amount and type of rod from storage. Towmotor boom trucks are utilized for removing loads of rod from storage as they are needed in the pickle house. Material to be pickled is placed on a hook and held in a rack to await its turn in the bath. Identification tags are placed on the hook with the load and contain information as to rod size, type, heat and wire size to be ultimately drawn. During the pickling operation, material is handled by the Sheppard Niles gantry type crane which lowers the rod into the first tank containing approximately a 5 per cent solution of sulphuric acid. Acid is constantly kept up to concentration and is checked daily. Rod is pickled for approximately 25 minutes and then washed in a specially built high pressure spray tank for acid removal. Next it moves into a tank of boiling water and lime, after which it is fol-

PHOTOS #1, 2, 4 & 5 BY THE AUTHOR.

Arrangement

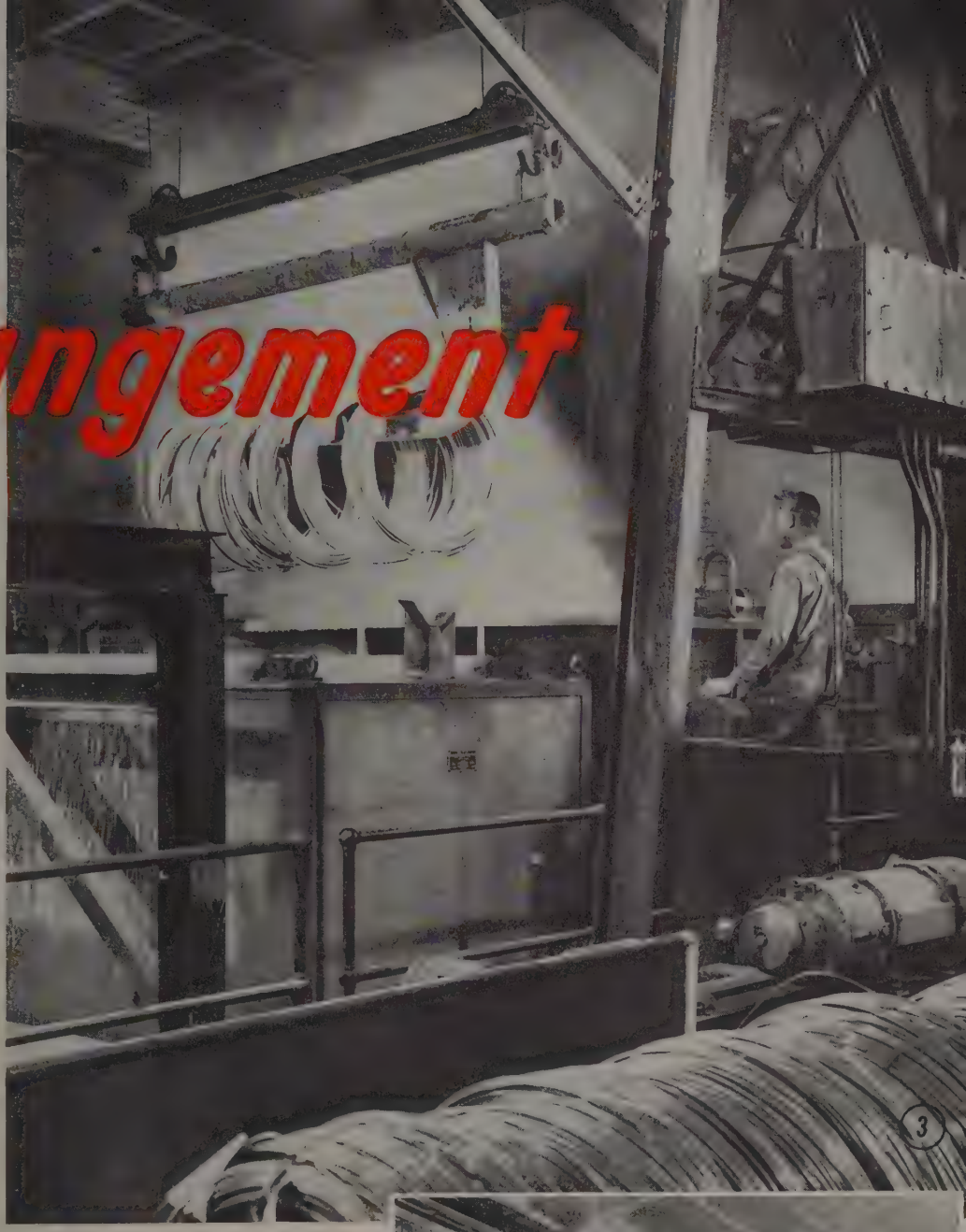


Fig. 1—Operator is placing coiled rod on pickling hook in rack prior to entering acid tank

Fig. 2—Wire storage area showing "hairpin hook" removing 3500 pounds of coiled rod

Fig. 3—One man operates the entire line composed of three acid tanks, one liming tank and a flash baker by use of the gantry crane. Material is shown emerging from the lime bake

Fig. 4—Outlets for acid fumes into "Plenum Chamber" is shown on wall behind pickling line

lowed by a baking in a gas fired Morrison flash baker.

Atmosphere Cleaned—Pickling tanks are lined with an acid resistant brick and rubber. Pickle room uses four fans for bringing in outside air during the summer and heated air during the winter season. Acid fumes and air from the pickle room are removed through a "Plenum Chamber" equipped with many water spray nozzles for washing acid from the air before it is exhausted to the surrounding community by way of a large fan located in a stack on the roof. The pickle room is kept at a slightly lower pressure than surrounding areas to prevent acid fumes from finding their way to the rest of the plant's buildings. Lined with acid brick the chamber is outlet baffled to insure thorough washing. Waste water and dumped acid are run through a dilution tank and a series of setting tanks for neutralization of acid before discharging into the city sewers.

Pickled, washed and limed rod is placed in a storage rack after which it is removed by boom truck to a storage area in the wire drawing building located adjacent to the pickle house. One shift in the pickle house produces enough material for operation of two shifts in the wire drawing mill. Present production tonnage is about 60 tons every 8 hour shift.

Pickle house contains three acid tanks, one spray tank, one lime tank and flash baker. At the storage racks one operator is kept busy with a boom truck supplying material for pickle hooks, removing limed rods from hooks to storage area and taking stored limed rods from storage to wire drawing blocks. Rod to be drawn is placed on racks at each of the wire drawing blocks. "Flipper" type reels are used on the small blocks (3/8-inch capacity Vaughn wire drawing blocks) and large reels are used on the 5/8-inch Vaughn wire drawing blocks. These "flipper" reels allow the end of one coil to be butt welded to the beginning of the next coil while the wire is in process of being drawn. Tungsten carbide dies are used for drawing which offer long life and hold an accurate size for many miles of wire processed. Cleaned and inspected twice weekly, the dies when worn oversize are recut to a larger diameter. Cost of these dies ranges from $15 to $65 depending upon size. Dies

Fig. 5—"Spider" used to handle material while in annealing department. Rod is shown being slipped over device and a full load ready for the furnaces is shown being removed prior to entering furnace

Fig. 6—Flow of material through plant

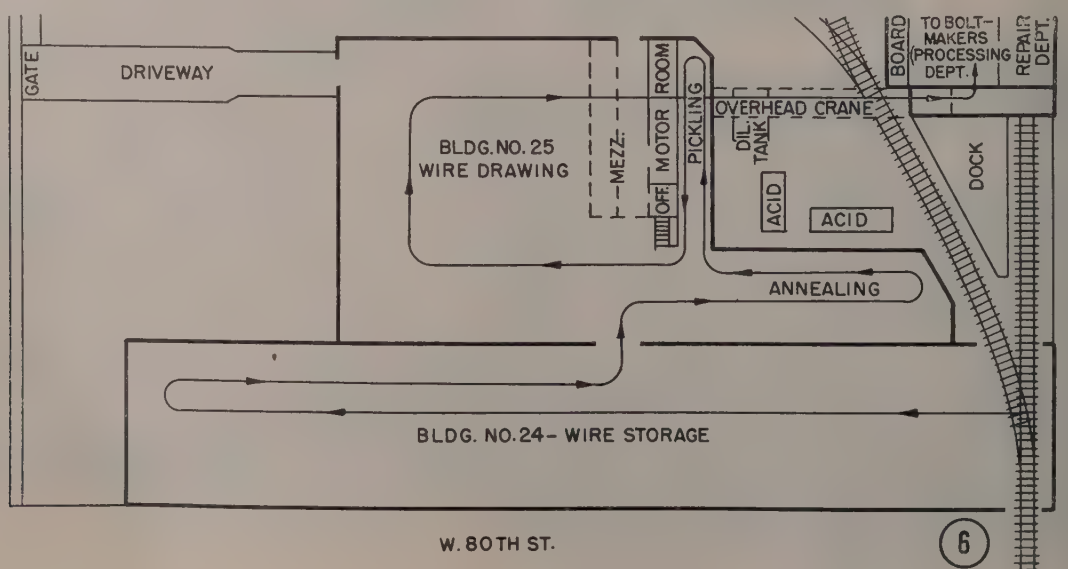
Fig. 7—Jib crane moves stripper of wire from drawing blocks to above "high hat" at upper end of gravity roller conveyor

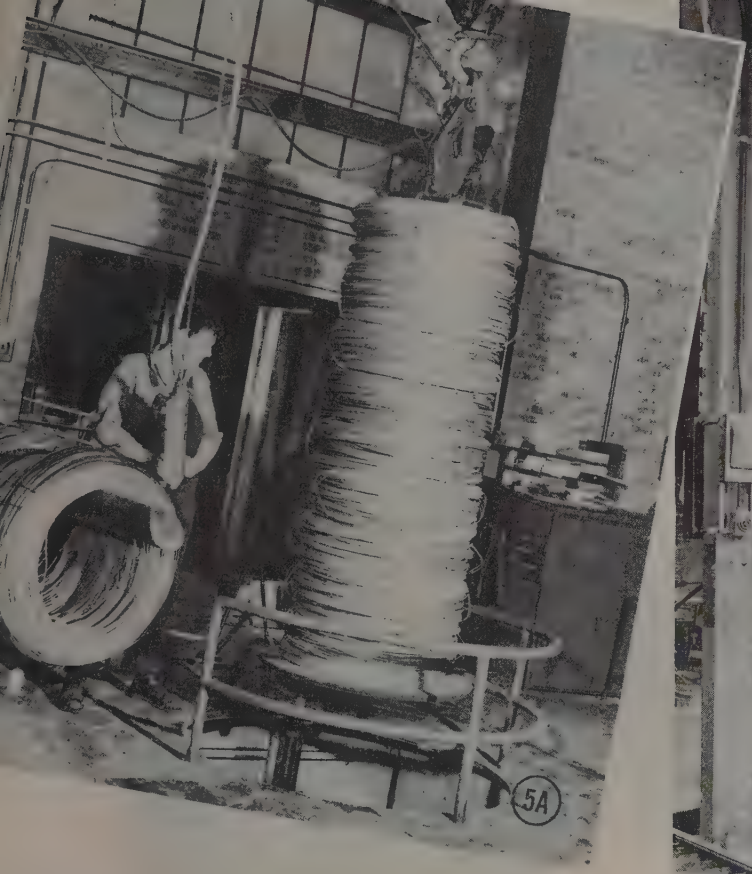
Fig. 8—At lower end of gravity conveyor, "high hats" are picked up by overhead crane shown

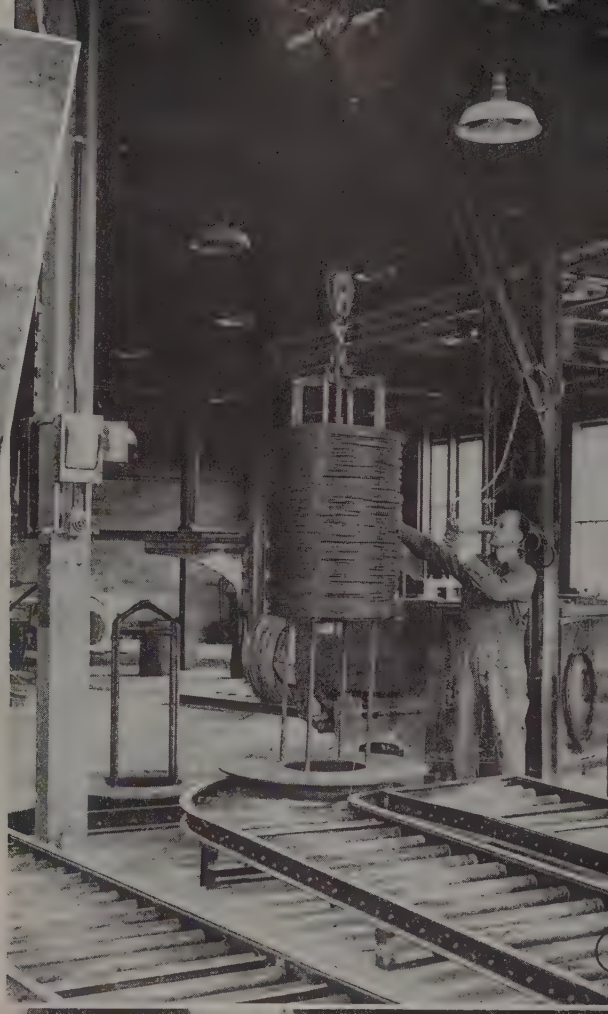
used range from 0.081 to 0.750-inch.

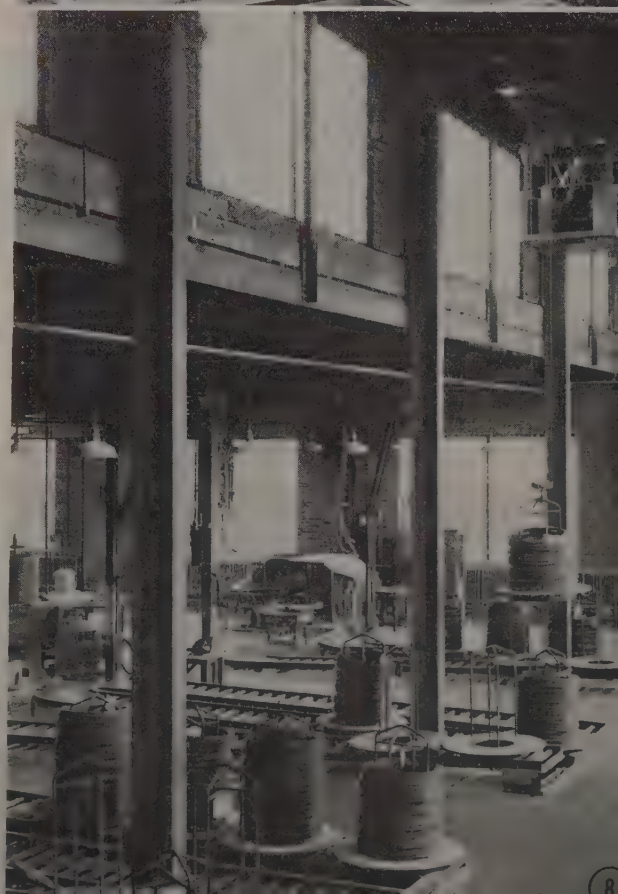
Most all wire is drawn to a tolerance of 0.001-inch. However, aircraft bolt wire is produced to a tolerance of 0.0005-inch. Approximately 120 different sizes of wire are drawn at this plant to make the thousands of different bolts and other products produced. Each wire drawing block utilizes two crane hoists, one for handling rods and one for handling finished wire. Drawing blocks are of variable speeds, having a range from 200 to 450 feet per minute with average reduction in area being approximately 25 per cent.

"High-hats" Facilitate Material Movement — Limed rod is drawn through a stearate material which combines with the lime when passing through the die to give the finished wire a glassy surface affording lubricating properties for subsequent cold heading operations which are performed in another area of the plant. Drawn wire is stripped from the block with a









crane hoist and placed on "high-hats" holding approximately 1500 pounds of material. They are put on a conveyor where gravity automatically positions it under a monorail crane which lifts and transports material into the main portion of the plant where all cold heading operations take place. A monorail crane is used to take the full "high hats" to the header room conveyor from which fork trucks deliver full "high hats" to headers and return empty ones to the crane. They are then returned to wire drawing division. "High hats" save handling of individual wire coils in the header room and eliminate necessity of scrapping coil ends when running wire into the machine.

Annealing is utilized whenever soft wire is required for special bolts, Phillips head screws, clutch head screws and sheet metal screws. A most practical handling device referred to as a "spider" is used to handle material while it is in the annealing department. A worm gear elevator allows the "spider" to be moved up and down to receive or dispose of its load of coils. In the annealing division, there are six furnace platforms used with two cover-type Lee Wilson furnaces. Each weighs 6½ tons and incorporates an inside cooling cover made of stainless steel which is provided with a dual water and oil seal. For guaranteed heat retention these four additional bases afford much greater production due to the fact that material can be left standing on the base under the stainless steel cover during its cooling time and the cover type furnace may be moved to anneal another "spider" load of material. Some material is cooled in air and some in special atmospheres in order to achieve the desired physical properties required in the finished product.

By J. M. TIPPETT
The Linde Air Products Co.
New York

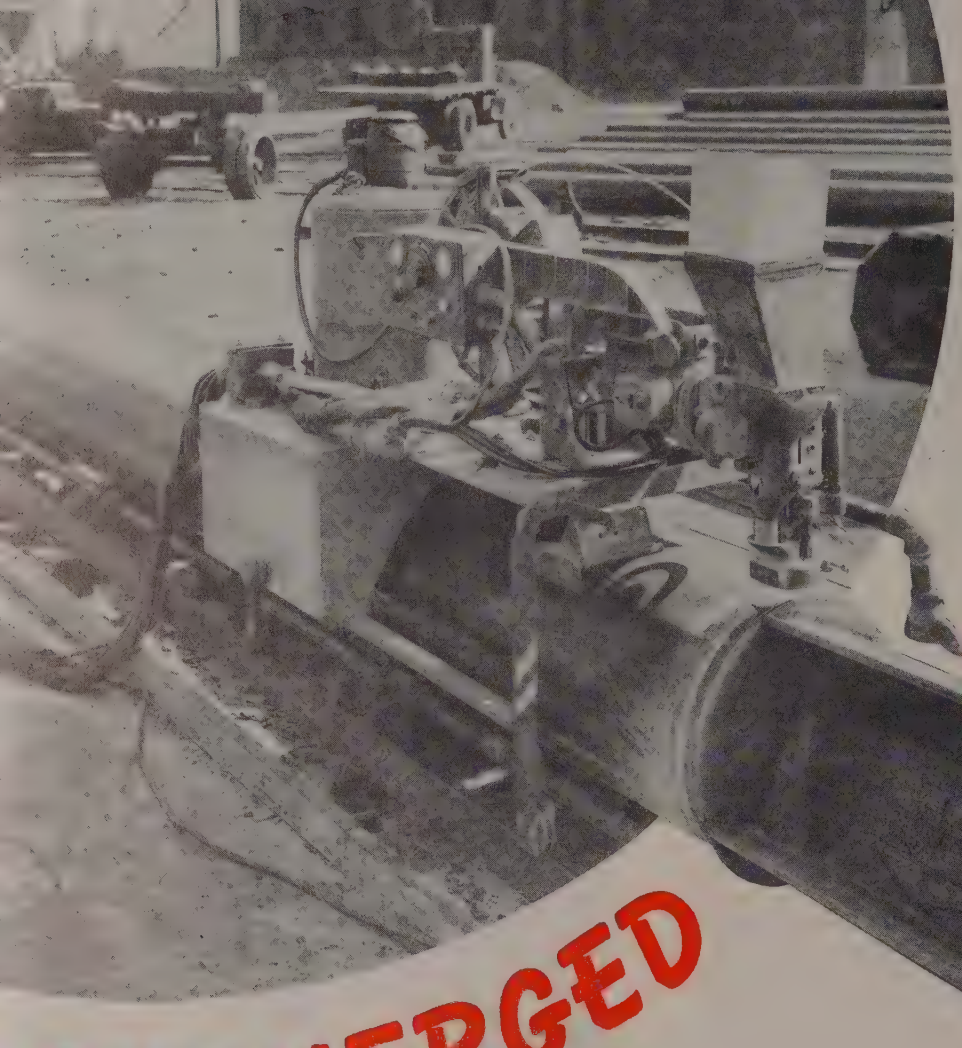


Fig. 1 — Low gantry supports the welding head for making longitudinal and girth welds in the production of piling

SUBMERGED MELT

Fig. 2—Parts of beam are held in position while tacked together by metal arc

Fig. 3—Typical installation with welding carriage supported on track above the work

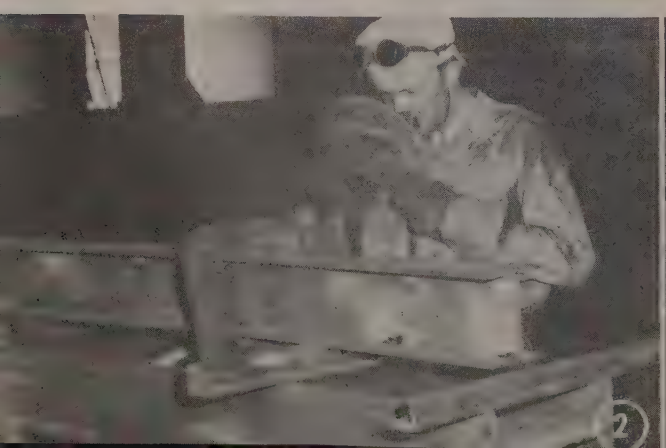
Fig. 4—Box beams produced by welding two facing U sections

Fig. 5—Portable welding machine is guided by the curved flange of this large circular girder

Fig. 6—A templet guides the welding head to produce this irregular-shaped section

DESIGNERS as well as the fabricators for some years have resorted to fabrication by welding when confronted with a problem of using or supplying large structural sections or sections not ordinarily carried in stock. Some recent designs, particularly in the field of heavy earth moving equipment, have called for stiffening members of nonuniform cross-section or members of a size or type not usually rolled. Here too, fabrication by welding is the answer to the problem of supplying parts that are not readily available.

A considerable increase in the fabrication of structural sections results mainly from the current shortage



Automatic practices are especially well suited to weld-fabricating a variety of special sections from shapes formed by heavy presses and press brakes

ELDING

Structural Steel Sections

f steel. Available production capacity of welding ma-
hines and forming equipment that were acquired
y many fabricators during the war is also respons-
le. Heavy presses and brakes make it possible to
rm flat plates into deep channels and angles, which
e welded together to form the widely used box sec-
on beam. When the required member is so large
s to be beyond rolling capacities, or heavy enough
be considered a special, in these days of steel
arcities it is only logical that it be fabricated by
elding. Some users and suppliers of structural
apes, handicapped by their geographical location,
nd it economical to fabricate even normal sizes of
eams as needed rather than carry large stocks of
l the necessary sizes.

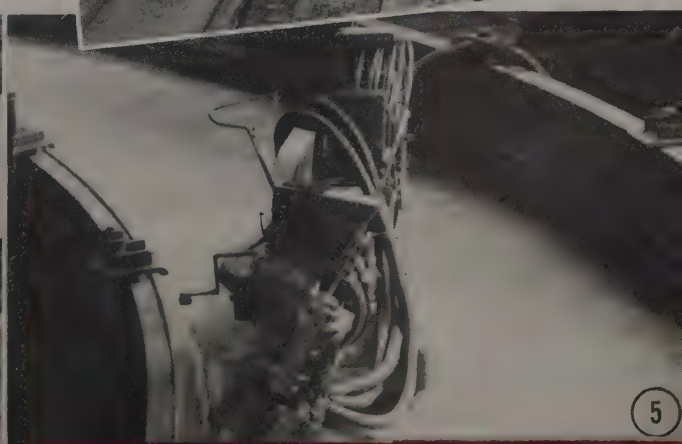
Automatic welding is suited to this type of fabrica-
on by the nature of the welds employed, which are
sually long fillets, butts or laps. Unionmelt weld-
g is especially adapted to this work. Submerged
elt welding, though usually applied automatically
ffers from most automatic welding. Other methods
f arc welding, either hand or automatic, use a coated
ectrode which produces a gaseous shield to protect
ectrode and weld puddle. The submerged melt weld-
g process uses a bare rod and a separately applied
ranular material which covers the end of the weld-
g rod and the molten puddle.

Part of this composition melts in the welding heat and submerges the end of the rod and the fluid weld metal. This makes possible the use of high current densities, and provides a complete liquid shield beneath the granular material. No arc and usually no flash is visible. Whereas shielded arc welding makes use of current densities from 3000 to 10,000 amperes per square inch of steel electrode cross-section, in submerged melt welding current densities up to 40,000 amperes and more per square inch are normally used. Those high current densities make possible the deep penetration, high welding speeds and high quality of these welds.

Jigs and fixtures required for fabricating steel sections can be quite simple, and are relatively inexpensive even when motorized so that the weldment can be positioned between welds without removing it from the jig. Motorized equipment for this work has often been made by using a standard welding positioner at one end and a trunnion mounted on an A frame on the other. Major requirement of the jig when fabricating such sections as I and H beams from plate by fillet welding, is to position the weld for down hand work. Usually the beam which has been assembled and tacked together is rotated so that the flange being welded is 30 degrees from the horizontal. The two welds forming the T are then adequately backed up by the flange itself. If the beam is positioned so that the welding rod is pointed directly at the seam, there is danger of weld run-out unless fit-up is perfect and the pieces are held tightly together during welding.

It is seldom practical to use the welding jig for assembling and fitting the section. Jigs for fitting

From data presented at the annual meeting, American Welding Society, Oct. 24-29, 1948, Philadelphia.



are similar to those for welding except that they are usually heavier. Members of the beam are held in close contact by heavy stiff backs with wedges driven under them until they have been tacked. Fig. 2 shows a stiff back and wedge holding one end of a medium sized H beam while it is tacked together by manual metal arc welding. Because the two welds in the center of the flange tend to warp the plate and pull the edges of the flange toward the web, the plate forming the flange is sometimes prebent in the opposite direction approximately ⅛-inch per foot of flange widths so that the finished flange will be flat. Flange distortion, if objectionable, can also be taken out in a press after welding.

After the beam is fitted up, it is taken to the welding position. In its simplest form this consists of two major parts: Welding machine track and its supports, and the frame to support the member to be welded. Fig. 3 illustrates the basic setup of this type. The base is made of heavy beams. Vertical members welded to this carry the cantilever arms on which the track is mounted. In front of this structure and below it, frames are erected which hold the weldment. In this case, they are made up of flat stock bolted together, so as to accommodate various sizes of beams and allow for changing the angle between welds when working on beams whose flanges are not the same in width. Beams of the size shown will normally have a ⅜-inch thick web and ½-inch thick flange. They are Unionmelt welded at speeds from 12 to 20 inches per minute or faster, using approximately 600 amperes and 30 volts. Variations of these basic requirements for fixtures and procedures may be as numerous as beam sizes and designs.

Rolled angles 12 x 6 x ⅝ are easily fabricated into box sections. A corner butt weld is used, backed with a ½-inch diameter rod. A 30-degree bevel on the longer leg of the angle forms a V groove. One hand pass and three machine passes at 12 inches per minute complete the weld.

Fig. 7—Welding head mounted on cantilever beam welding both inside and outside seams of tubular sections

Fig. 8—Heavy plate butt welded to a cast steel stub in fabrication of a diesel engine frame

In this same shop a square box section is also fab ricated from flat plate formed into U sections and butt welded as shown in Fig. 4. The plate is 1-inch thick with a 22-degree included bevel in the joints. A ⅜ inch backing bar is used under the weld and five machine passes are made at speeds from 13 to 9 inches per minute. Welding current is from 900 to 1000 amperes. Use of rolled shapes in combinations to form deep channels or other heavy sections, and the addition of flat plate to increase web depth or flange width, is standard practice.

Large arches and members having curved sections may require more complex jigs, though in many cases a portable machine can be placed directly on the piece being welded. By employing guiding devices the machine will accurately follow long curves and sweeps. Fig. 5 shows a machine with such a guiding device depositing a fillet on a 42-foot diameter girder. Sections having reverse curves or curves of varying radii can be welded by mounting the welding machine on a device which will follow a template. Fig. 6 shows a welding head mounted on a traveling pantograph arrangement. With this equipment, reverse curves of small diameter can be negotiated and contour welding of most any type can be accomplished.

Fabrication of large tapered tube sections is easily done by any shop which ordinarily uses the process for pressure vessel work. The sections of tube are first rolled into their designed diameters and the straight seam welded inside and out. Sections are then fitted together and tacked. The entire beam is placed on a set of heavy rolls and rotated while the round-about fillets are made. Fig. 7 shows this work being done with a highly flexible method of mounting the welding equipment over motorized traveling and turning rolls. The welding head is mounted on the end of a cantilever beam which moves vertically only. The rod reel is mounted at the opposite end of the beam so that it does not limit the diameter in which inside welding can be done. The carriage and rolls combination has a single motor and variable speed unit so geared that the drive can be shifted from turning rolls to carriage travel for round-about or long seam welding.

Two variations of equip- (*Please turn to Page* 91

Third National MATERIALS HANDLING EXPOSITION

To Appeal to Cost-Conscious Executives

Expected to eclipse last year's show in attendance and number of exhibitors, the exhibits and conference sessions again this year point the way in the last cost-reducing frontier—efficient materials handling

EMPHASIS in both the exhibits and conference talks of the Third National Materials Handling Exposition will be placed on the need for greater efficiency in handling to reduce production and distribution costs and on the greater use of existing facilities for storage. To be held in Philadelphia's Convention Hall January 10 to 14, the show is expected to top last year's show in Cleveland in the standpoint of attendance.

The management and materials handling divisions of the American Society of Mechanical Engineers and the Material Handling Institute are jointly sponsoring the 5-day event. Conducted by the ASME groups will be a conference on materials handling, running concurrently with the exposition each of the days. This program (see p. 64) is scheduled to take place in the ball room of Convention Hall. Another feature will be a materials handling theater, showing the latest films on handling subjects.

Termed one of the five largest annual industrial expositions held in the United States, the Materials Handling Exposition has attracted well over 200 exhibitors. These companies will show a wide variety of equipment, among which will be hand and lift trucks, conveyors, hoists, fork trucks, skids and pallets, monorails, portable elevators, tractors, stacking units and cranes, along with accessories.

With approximately 35 per cent of every dollar of industry's payroll spent for handling and with labor and material costs up even from the time of the first materials handling show two years ago, it is expected that an enthusiastic aggregation of executives will converge upon Philadelphia for the event. The reduction of handling operations, and the efficient use of every cubic foot of space can be a means of halting the rising cost of living. To industry, lowered operating costs plus greater use of existing capital assets, means greater profit.

Co-chairmen of the technical program committee for the ASME are Curtis H. Barker Jr., vice president, Pallet Sales Co., and national chairman of the Materials Handling Division, and Prof. W. R. Mullee, department of administrative engineering, New York University, national chairman of the ASME Management Division.

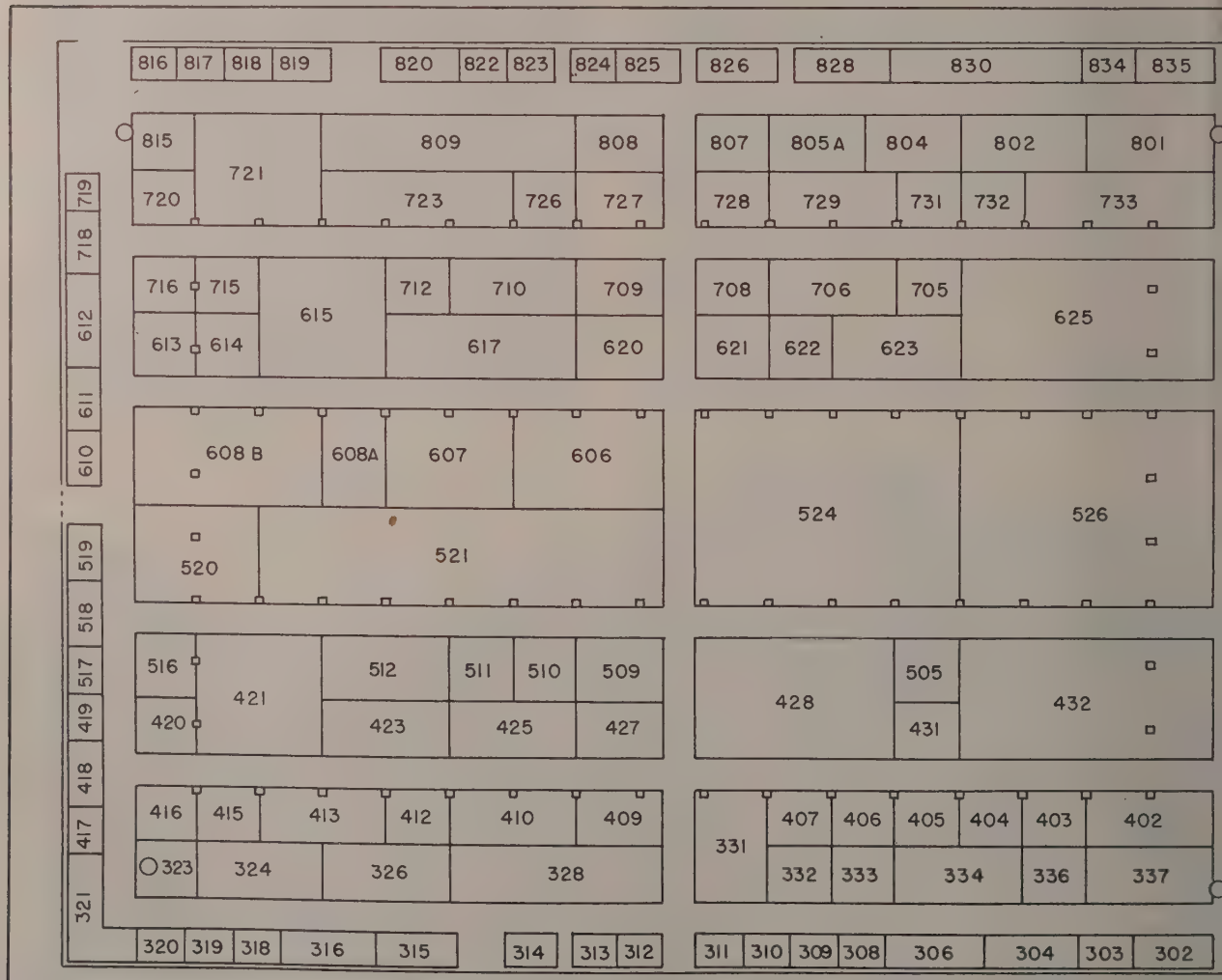
MATERIALS HANDLING EXPOSITION

EXHIBITORS

At Philadelphia Convention Hall, January 10-14, 1949

Exposition Hours: Daily, 10:30 a. m. to 5:30 p. m.

Exhibitor	Booth Number
Acme Pallet Co., Inc., New York	22
Acme Steel Co., Chicago	705
Acorn Wire & Iron Works, Chicago	415
Addison Semmes Corp., Racine, Wis.	611
Aerol Co. Inc., Los Angeles	141
Aeroquip Corp., Jackson, Mich.	610
Albion Industries Inc., Albion, Mich.	101
Alvey Conveyor Mfg. Co., St. Louis, Mo.	202
Alvey Ferguson Co., Cincinnati, O.	142
American Engineering Co., Philadelphia	109
American Machine & Fdry. Co., New York	822
American Monorail Co., Cleveland	326
American Pulley Co., Philadelphia	403
American Society of Mechanical Engineers	132
American Steel & Iron Wks., Chicago	719
American Warehousemen's Association	123
Anthony Co., Streator, Ill.	121
Arrow Contractor Equipment Co.	134-A
Arrow Products, Grand Rapids, Mich.	46
Atlantic Distributors Inc., Long Island City, N. Y.	44
Audubon Wire Cloth Corp., Philadelphia	416
Automatic Transportation Co., Chicago	524
Automotive Rubber Co. Inc., Detroit	33
Baker Industrial Truck Div., Baker-Raulang Co., Cleveland	608-E
William Bal Corp., Newark, N. J.	517
Baldwin Locomotive Works, Eddystone, Pa.	218-C
Ballinger Associates, Philadelphia	824
Barber-Greene Co., Aurora, Ill.	830
Barrett-Cravens Co., Chicago	331
Bassick Co., Bridgeport, Conn.	41
Beall Pipe & Tank Co., Portland, Ore.	125-E
Bell Aircraft Corp., Buffalo	129
Benbow Mfg. Co., Redwood City, Calif.	17
Better Packages Inc., Shelton, Conn.	103
Bond Fdry. & Machine Co., Manheim, Pa.	147
Bosworth Mfg. Co., Cleveland	102
Brainard Steel Co., Warren, O.	505
Buda Co., Harvey, Ill.	410
E. W. Buschman Co., Cincinnati, O.	509
Butler Bin Co., Waukesha, Wis.	316
C & D Batteries Inc., Conshohocken, Pa.	612
C.I.T. Corp., N. Y.	804
Caster & Floor Truck Association	417
Chilton Co. Inc., Philadelphia	1
Chisholm-Moore Hoist Corp., Tonawanda, N. Y.	826
City Machine and Wheel Co., Akron, O.	405
Clark Tructractor Div., Clark Equipment Co., Battle Creek, Mich.	526
Cleveland Wire Spring Co., Div. of Reynolds Spring Co., Cleveland	145
Coffing Hoist Co., Danville, Ill.	54
Coles Cranes Inc.	409
Colson Equip. & Supply Co., Elyria, O.	313
Comet Mfg. Co. Inc., Minneapolis, Minn.	34
Conco Engineering Works, Mendota, Ill.	825
Ira L. Conkling Co., Ardmore, Pa.	50
Conover-Mast Publications, Inc.	27
Conveyor Specialty Co. Inc., North Quincy, Mass.	802
H. W. Creager Mfg. Co., Arvada, Colo.	314
Crescent Truck Co., Lebanon, Pa.	138



Cyclone Fence Div., American Steel & Wire Co., Waukegan, Ill. 140
Darnell Corp., Ltd., Long Beach, Calif. 15
Dempster Brothers, Inc., Knoxville, Tenn. 328
Diagraph-Bradley Industries Inc., St. Louis 310
Divine Brothers Co., Utica, N. Y. 519
Drake, Startzman, Sheahan, Barclay Inc., New York 25
Dri-Flo Co. Inc. 21
Eastern Industries Inc., New Haven, Conn. 11
Economy Engineering Co., Chicago 312
Thomas A. Edison Inc., Edison Storage Battery Div., West Orange, N. J. 420
Electric Industrial Truck Association 835
Electric Products Co., Cleveland 614
Electric Storage Battery Co., Philadelphia 608-A
Elizabeth Iron Works Inc., Elizabeth, N. J. 828
Elwell-Parker Electric Co., Cleveland 615
Equipment Mfg. Inc., Detroit 37
Erie Enameling Co., Erie, Pa. 35
Euclid Crane & Hoist Co., Cleveland 732
Fab-Weld Corp., Philadelphia 727
Fairbanks Co., New York 105
Faultless Caster Corp., Evansville, Ind. 516
Federal Telephone & Radio Corp., Newark, N. J. 712
Harry J. Ferguson Co., Detroit 136
Fibre Specialty Mfg. Co., Kennett Square, Pa. 127
Forker Corp., Cleveland, O. 118
THE FOUNDRY 501
Garlock Packing Co., Palmyra, N. Y. 834
General Electric Co., Schenectady, N. Y. 733
Geneva Metal Wheel Co., Geneva, O. 302
Gerlinger Carrier Co., Dallas, Ore. 720
A. J. Gerrard & Co., Chicago 518
Gerrard Steel Strapping Co., Chicago. 140
Getman Bros., South Haven, Mich. 131
Globe Co., Chicago, Ill. 135
Globe Hoist Co., Philadelphia 216
Gould Storage Batry. Corp., Depew, N. Y. 728
Great Lakes Steel Corp., Ecorse, Mich. 323
J. W. Greer Co., Cambridge, Mass. 315
Gummed Industries Association, New York 222
Handling Devices, Inc., Boston 320
H. G. Hanline Co., Philadelphia, Pa. 419
Harnischfeger Corp., Milwaukee, Wis. 425
Harrington Co., Philadelphia 303
Heppenstall Co., Pittsburgh, Pa. 221
Hertner Electric Co., Cleveland 224
Fred Hill & Son Co., Philadelphia 715
Frank G. Hough Co., Libertyville, Ill. 606
Jacob House & Sons, Buffalo, N. Y. 24
Hydraulic Equipment Co., Cleveland 731
Hyster Co., Portland, Oreg. 428
Ideal Stencil Machine Co., Belleville, Ill. 4
Industrial Equipment Co., Chicago 413
Industrial Tire & Wheel Co. Inc., Memphis, Tenn. 45
Industrial Washing Machine Corp., New Brunswick, N. J. 336
Inland Wire Products Co., Chicago 311
Insley Mfg. Corp., Indianapolis, Ind. 709
Ironbound Box & Lumber Co., Hillside, N. J. 807
Island Equipment Corp., N. Y. 207
Joyce-Cridland Co., Dayton, O. 144
Kalamazoo Mfg. Co., Kalamazoo, Mich. 334
Kayel Products Corp., Detroit 36
Keen Mfg. Co., Flat Rock, Mich. 104
L & H Wood Mfg. Co., Farmington, Mich. 39
Lanham Co., Louisville, Ky. 510
Lansing Co., Lansing, Mich. 40
R. B. Latch Eng. Co., Milmont Park, Pa. 18
Latendorf Conveying Corp., Bayonne, N. J. 218-A
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Lewis-Shepard Products Inc., Watertown, Mass. 625
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Lull Mfg. Co., Minneapolis, Minn. 723
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Manning, Maxwell & Moore, Muskegon, Mich. 726
Mansaver Industries Inc., New Haven,
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May-Fran Engineering Inc., Cleveland 628
Mechanical Handling Systems Inc., Detroit 813
Mercury Mfg. Co., Chicago 324
Merrill Brothers, Maspeth, N. Y. 318
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Monarch Rubber Co., Hartville, O. 32
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Patron Transmission Co., New York 19
Penton Publishing Co., Cleveland 501
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Tract-R-Lift Corp., Chicago 735
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Triangle Equipment Co., Nutley, N. J. 7
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Wood Pallet Co., Inc., N. Y. 31
Wright Hoist Div., American Chain & Cable Co., York, Pa. 306
Yale & Towne Mfg. Co., Philadelphia 521
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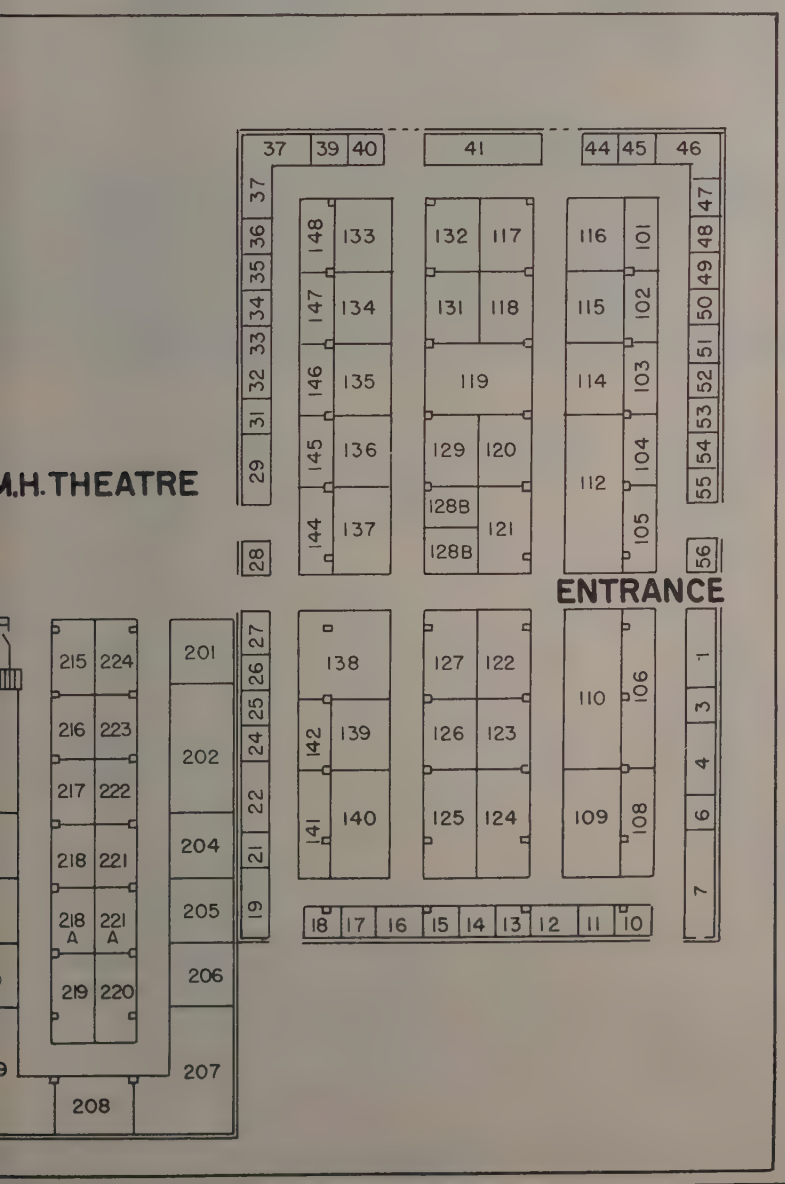
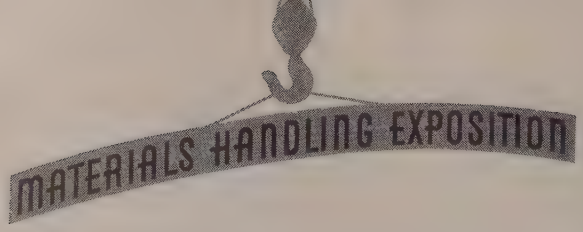




PROGRAM

Conference on materials handling, conducted by the Management and Materials Handling Divisions of the American Society of Mechanical Engineers, will run concurrently with the exposition. Its program follows:

Monday, Jan. 10—Afternoon

"PROLOGUE SESSION"

Chairman: Bernard Lester, sales consultant, program committee chairman, ASME Materials Handling Division. *Message of Welcome:* Curtis H. Barker Jr., sales manager, Lamson Corp., Syracuse, N. Y.; chairman, ASME Materials Handling Division; conference general chairman.

Subjects and Speakers: "Outlook for the Industry", Dr. Charles F. Roos, Econometric Institute Inc., New York; "Opportunities for Sales Engineering", Ezra W. Clark, consultant on materials handling methods, Battle Creek, Mich.; "The User Talks to the Sales Engineer", T. O. English, Aluminum Co. of America, Pittsburgh.

Tuesday, Jan. 11—Morning

"OPPORTUNITIES FOR MANAGEMENT"

Keynote Speaker and Chairman: Curtis H. Barker Jr., "The Importance of Materials Handling". *Subjects and Speakers:* "Economics of Materials Handling", Stevens H. Hammond, Whiting Corp., Harvey, Ill.; "The Materials Handling Engineer", T. L. Carter, American Cyanamid Co., New York.

Tuesday, Jan. 11—Afternoon

"IMPROVEMENTS IN METHODS"

Chairman: H. B. Maynard, president, Methods Engineering Council, Pittsburgh. *Subjects and Speakers:* "Modern Methods Engineering and Materials Handling", by the chairman; "Work-Simplification in Materials Handling", Allan H. Mogensen, New York; "Opportunities for Distribution Economies (Industry's Recommendations to Common Carriers): For Industry—Neil Loney, industrial consultant, Detroit; For the Railroads—Fred Carpi, Pennsylvania Railroad, Philadelphia; For the Highway Carriers—W. F. White, Great Southern Trucking Co., Jacksonville, Fla.; National Point of View—J. W. Milliken, *Railway Age,* New York.

Wednesday, Jan. 12—Morning

"CASE STUDIES"

Chairman: J. B. McGinn, American Viscose Corp., Philadelphia; president, Materials Handling Society of Philadelphia. *Subjects and Speakers:* "Efficient Co-ordination of Materials Handling Equipment in a Manufacturing Plant", C. M. Harris, Electrolux Corp., Old Greenwich, Conn.; "Applications of Methods Engineering and Equipment Design", Donald E. Farr, engineering supervisor, Methods Engineering Council, Pittsburgh; "Ups and Downs of Handling in Multistory Warehouses", D. O. Haynes, Merchants Refrigerating Co., New York.

Wednesday, Jan. 12—Afternoon

PANEL DISCUSSION

Chairman: H. E. Blank, *Modern Industry,* New York. *Speakers:* Industrial Relations, to be announced; Cost Control, Emil Gibian, Thompson Products Inc., Cleveland; Lighting, Arthur A. Brainerd, Philadelphia Electric Co., Philadelphia; Building Construction, to be announced; Safety, D. M. Rush, General Aniline & Film Corp., Binghamton, N. Y.

Wednesday, Jan. 12—Evening

ANNUAL BANQUET

Thursday, Jan. 13—Morning

"ADVANCES IN TECHNIQUE"

Chairman: Jervis B. Webb, Jervis B. Webb Co., Detroit. *Subjects and Speakers:* "Automatic Pallet Loading", M. Landon, Sun Oil Co., Philadelphia; "Equipment, Layout, Operation Processing—Solving the Materials Handling Problem", W. J. Dernberger, Ford Motor Co., Dearborn, Mich.; "Developments in Bulk Handling", E. A. Wendell, Link-Belt Co., Chicago.

Thursday, Jan. 13—Afternoon

EQUIPMENT SYMPOSIUM

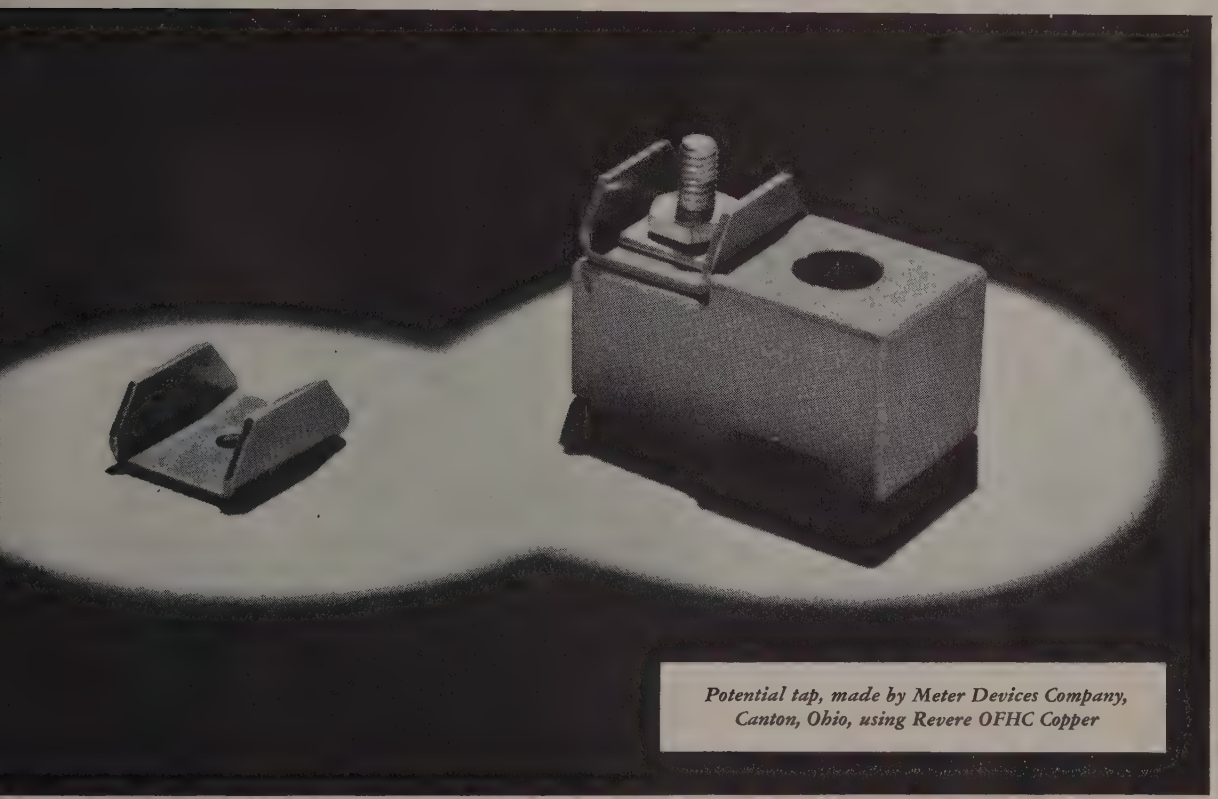
Chairman: J. D. Sheahan, Drake, Startzman, Sheahan, Barclay Inc., New York. *Symposium Discussions:* "Developments in Conveyor Design and Application"—*Association Participating:* Conveyor Equipment Manufacturers Association, Washington, D. C. *Speaker:* R. C. Sollenberger, executive secretary of the association. "Developments in Crane, Hoist and Elevator Design and Application"—*Association Participating:* Overhead Traveling Crane Institute, New York. *Speakers:* A. R. Walkeley, Shaw-Box Crane & Hoist Division, Manning, Maxwell & Moore Inc., Muskegon, Mich.; F. M. Blum, Overhead Traveling Division, Harnischfeger Corp., Milwaukee, Wis. "Developments in Industrial Truck Design and Application"—*Association Participating:* Electric Industrial Truck Association, Long Island City, N. Y., and manufacturers of gas trucks. *Speakers:* Robert Pratt, General Foods Corp., New York; Lee C. Daniels, Towmotor Corp., Cleveland; J. C. Erickson, Elwell-Parker Electric Co., Cleveland. "Developments in Marking and Stenciling"—*Speaker:* H. W. Hempel, Marsh Stencil Machine Co., Belleville, Ill.

Friday, Jan. 14—Morning

"MATERIALS HANDLING OF TOMORROW"

Chairman: John B. Thurston, Wallace Clark & Co., New York. *Subjects and Speakers:* "The Biggest Handling Job in the World", Col. James Glore, Transportation Corps Board, New York Board of Embarkation, Brooklyn, N. Y.; "'Tomorrow' in Air Handling", Parkman Sayward, Slick Airways Inc., San Antonio, Tex.; "Lessons from the Berlin Airlift", speaker to be provided by the United States Air Force.

IT PAYS TO LOOK AT COST PER PART NOT PRICE PER POUND!



Potential tap, made by Meter Devices Company, Canton, Ohio, using Revere OFHC Copper

THERE'S certainly nothing complicated-looking about the small stamped channel section of .042″ gauge copper shown in the accompanying illustration. And that's what makes this story all the more interesting.

It is told by Mr. T. J. Newman, Manager of the Meter Devices Company, Canton, Ohio.

"Even a relatively simple application can cause trouble," says Mr. Newman, "a lot of trouble—if you are not using exactly the right metal for the particular job.

"In our case the problem centered around this small stamped channel, originally made of electrolytic copper with a Rockwell B 35/45. The part is bolted to a porcelain base and mounted on the test panel in a standard electric meter box. Used on the service box for test purposes, it allows the connection of a small feed-in wire off the main lines to supply the potential coils in the meter.

"Sounds simple enough. Yet complicated trouble came quickly. It started with cracks in the bends. And that resulted in a high percentage of rejections, along with expensively close inspection.

"It was then that we called in the Revere Technical Advisory Service. Acting on their recommendation, we exactingly tested potential taps made of OFHC Copper with Rockwell B 49/50. Results were so satisfactory that we placed a considerable production order.

"In doing so we frankly paid a premium for OFHC. But that premium is much more than offset by our saving in scrap and the all-around reduction in costs. Our potential taps now have no more cracks in the bends—there are no rejections whatever—and expensive inspection has been eliminated."

Thus the Meter Devices Company has learned, by its own exacting tests, that the premium purchase of OFHC Copper is a real economy. Once again it is proved that the real guide to economy is the cost of the finished part, not the price per pound of the metal of which it is made.

This progressive company is only one of the many modern industrial organizations that have profited by calling in the Revere Technical Advisory Service. Perhaps you would profit too. We suggest that you ask the nearest Revere Sales Office for more information.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, New York

Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.; New Bedford, Mass.; Rome, N. Y.—Sales Offices in Principal Cities, Distributors Everywhere

MATERIALS HANDLING EXPOSITION

Products marked with an asterisk (*) are being shown for the first time.

PRODUCTS *To Be Exhibited*

Acme Pallet Co. Inc. 22

To Exhibit—Wood, lightweight wood, shipping and aluminum pallets

Acme Steel Co. 705

To Exhibit—*E5 tool mount. No. 1 and 3 Steelstrappers, shear for cutting ¾ x 0.035-inch to 2 x 0.050-inch steel strap

Representatives—J. E. Ott, vice president, manager consumer products; J. G. Bucuss, manager of strapping division; J. W. Karstens, assistant manager of strapping division; C. J. Bruneel, Philadelphia district manager; H. W. Croop., N. J. Lynch, T. A. Kennedy, J. E. Tyler, H. E. McGrath, M. G. McGuinn, sales representatives

Addison-Semmes Corp. 611

To Exhibit—Method in which packaging and use of expendable corrugated board pallet are used

Representatives—John S. Addison, president; David R. Semmes, vice president; Ray E. Frase, sales manager; Nels H. Petersen, N. E. Mandernack, W. T. Donahue, B. C. Nelson, engineers

Albion Industries Inc. 101

To Exhibit—Semisteel and drop forged steel casters for industrial use, semisteel, solid rubber, plastic and moldon rubber wheels from 3 to 16 inch diameters

Representatives—Paul H. Sleeper, president; Stephen E. Janus, sales manager; E. W. Allen, assistant sales manager; distributors

Alvey Conveyor Mfg. Co. 202

To Exhibit—Motorized unit illustrating use of live roller conveyors and accessories for handling packages

Representatives—F. W. Nollman, William Jaenicke, Richard E. Anderson, Herbert Jenkins, C. R. Alvey, Phillip A. Schaeffer, James Etter, Robert H. Mayer, W. E. Sparling, Russell Tedman, M. Coker, N. W. Keener, E. Felber, L. W. Acker, Harold Block

Alvey-Ferguson Co. 142

To Exhibit—Miniature belt and live roller conveyor setup in operation, Mergaflow traffic control device for feeding two lines of conveyor into one, portable belt conveyor, samples of roller conveyor, wheel conveyor, chain, trolleys

Representatives—W. K. Stokes, sales manager; R. J. Blatt, C. J. Becker, A. W. Dixon, sales engineers

American MonoRail Co. 326

To Exhibit—Automatic dispatch carrier

Representatives—From Cleveland: J. P. Lawrence, president; C. de V. Miller, vice president and sales manager; E. H. Doerger, advertising manager; From Philadelphia: W. P. Comway, district manager; G. H. Gerding, Jack Abbott, sales engineers; plus the following sales representatives: Richard F. Robie, Boston; A. Gordon Davis, Winthrop Davis, Meriden, Conn.; Elbert Lively, John Stevens, George Coombe, George Chudyk, John Gruelich, Newark, N. J.; H. B. Brown, R. G. Berlinghof, Baltimore; R. P. Mahaffey, Robert Mahaffey, L. H. Hurst, Pittsburgh

American Pulley Co. 403

To Exhibit—Line of pressed steel hand trucks

Representatives—Caleb F. Fox III, vice president; E. Durlacher, manager, Materials Handling Division; Lindley M. Cowperthwait, Robert D. Sheppard, sales representatives; Hugh E. O'Brien, advertising manager

American Society of Mechanical Engineers 132

Exhibit devoted to activities and publications of the society

Representatives—Miss E. M. Murrayes, publication-sales manager; O. B. Schier II, meetings manager

Audubon Wire Cloth Corp. 416

To Exhibit—Metalwove conveyor belts in operation, sections of various types and specifications of Metalwove belts

Representatives—John D. Heins, Philadelphia representative; Otto C. Scherfel, superintendent; James G. McGinnis, engineer; R. J. Guba, general manager; L. W. Jones Jr., vice president

Automatic Transportation Co. 524

To Exhibit—*End control Skylift electric fork truck, *tilting type Transtacker, *push-pull attachment for Skylift fork trucks, Skylift fork truck, Skylift shipper, Transporter, Transtacker, attachments for standard fork trucks

Representatives—E. F. Twyman, general manager; J. A. Baldinger, assistant general manager; J. M. Johnson, assistant sales manager; R. M. Whitney, assistant advertising manager; J. L. VanCara, service engineer; C. H. Greener, service manager; B. I. Ulinski, chief engineer, Automatic Division; H. J. Framhein, chief engineer, Transporter Division; C. P. Whiteley, materials handling engineer; J. A. Robinson, A. M. Gertler, William R. Harshe

PERSONNEL *To Be Present*

Baker Industrial Truck Div., Baker-Raulang Co. 608B

To Exhibit—*FRH-20/36 2000 pound center control fork truck, *FBH-40/48 4000 pound fork truck, *revolving head for fork truck, FQH, FAH and JOMH fork trucks, E-3 low-lift truck, CXA crane

Representatives—D. L. Darnell, vice president; G. B. Davis, sales manager; M. W. McMillan, advertising and export manager; E. E. McVeigh, H. B. Greig, field engineers

William Bal Corp. 517

To Exhibit—Hard vulcanized fiber trucks, mill boxes and tote boxes, baker's bread boxes and arm baskets, salesmen's sample and tool cases, fiber barrels, commercial shipping trunks

Representatives—Fred. E. Norman, sales manager; Herbert Gill, advertising manager; A. Ned Wilson, president

Barrett-Cravens Co. 331

To Exhibit—*500 portable elevator, hand, hydraulic and electric lift trucks, the Power Ox line, pallet trucks, skids, Nifty Lifters, elevators, portable cranes, hand and special trucks, lifting and die tables, storage racks

Representatives—A. M. Barrett, president; C. E. Barnes, vice president; O. M. Lund, vice president and general manager; H. M. Donnelly, sales manager

Better Packages Inc. 103

To Exhibit—*Counterboy 500 model tape machine, Big Inch and pressure sensitive tape package sealers

Representatives—Al Smith, Pat Cassidy, H. Smith, Ira DeBlayker, O. K. Hill, T. Albert, R. Boester, Les James, L. Laughner, Jack Murphy, N. Campanaro, M. W. Waggoner

Bosworth Mfg. Co. 102

To Exhibit—L-Vator, general utility model Bin-Veyor, model C Moto-Trimmer conveyor

Brainard Steel Co. 505

To Exhibit—*Strap-O-Matic combination strapping tool, the Brainard strapping system, tools and accessories

Representatives—J. C. McGunnigal, general sales manager; F. E. Houck, sales manager, Steel Strapping Division; L. J. Lyons, district sales manager, New York; W. E. Daily, district sales manager, Philadelphia; D. O. Dougherty, sales representative, Philadelphia; J. D. Boyer, J. D. Yoxtheimer, A. E. Adamson, material handling engineers; J. W. Byrnes, sales representative, New York; O. H. Gagnon, district sales manager, Boston; Milton Krumenacher, sales representative, New York

Buda Co. 410

To Exhibit—*Buda-Hebard 5000 pound fork truck, *model FH platform type Chore Boy, *Buda-Hebard model H-120 heavy duty tractor, 2000 pound fork truck, Buda-Hebard model A14V medium duty tractor, model TR light duty tractor

Representatives—R. B. Fisher, vice president; W. T. Mulcahy, sales manager; R. J. Mulroney, sales manager; Robert Dickinson, advertising department

E. W. Buschman Co. Inc. 509

To Exhibit—Overhead trolley cable conveyor, gravity and roller conveyor, belt conveyors, two-wheel hand trucks

Representatives—E. W. Buschman, president; W. E. Todd, manager of sales; V. W. Sicking, secretary; Otto Svoboda, sales engineer

Butler Bin Co. 316

To Exhibit—Standard GA-8 Carscoop equipped with 18-inch drive tires and 10 cubic foot bucket, standard quadrant, clamshell and roller type bin gates

Representatives—M. R. Butler, president; J. A. Siegl, production manager, Carscoop division

City Machine & Wheel Co. 405

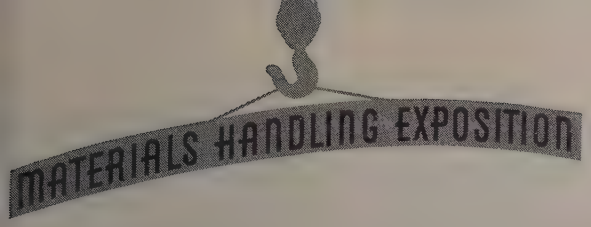
To Exhibit—Line of industrial wheels ranging in size from 6 to 16 inches

Representatives—J. L. Brown, owner; T. R. Landaker, sales engineer

Clark Equipment Co., Industrial Truck Division 526

To Exhibit—*Yardlift 60 with 112-inch lift, Utilitruc-6025 with 112-inch lift, Carloader-4024 with 120-inch lift, Elec-Clipper-2024 with 124-inch lift and *squeezer-upender, Clipper-2015 with 130-inch Hi-Lo Stack, Elec-Carloader-4015 with 130-inch Hi-Lo Stack, Trucloader with 84-inch lift, *Clarkat-26, Clipper-2015 with 96-inch lift and *universal cotton clamp

Representatives—Russell F. Oakes, manager of advertising; David K. Wirth, assistant manager, Detroit district office;



James Tinlin, assistant manager, New York district office; George Spatta, president; W. E. Schirmer, vice president and executive assistant; G. E. Arnold, secretary; L. L. Lyon, treasurer; L. A. Bixby, vice president—engineering; Frank Habicht, vice president—properties; C. H. King, vice president—manufacturing; J. G. Mack, vice president—purchasing; E. M. Schultheis, vice president—sales; Vine Cooke, general service manager; J. H. W. Conklin, sales manager; Elmer J. Dunham, chief engineer; plus other Industrial Truck Division representatives, district managers and distributors and their representatives

Cleveland Wire Spring Co. 145

To Exhibit—Steel tote boxes of various kinds, steel factory stools, brick and mortar hods

Representatives—F. G. Doerr, salesman; R. J. Poole, sales manager

Coffing Hoist Co. 54

To Exhibit—*Hoist-Jack, *Mighty Midget puller, Quick-Lift electric hoist, safety pull ratchet lever hoist and load binder, spur geared chain hoist, I-beam trolleys

Representatives—J. R. Coffing, general sales manager; G. H. Pool, district sales manager

Comet Mfg. Co. Inc. 34

To Exhibit—Motorized hand trucks, motor scooter

Representatives—H. D. Cook, president; L. B. Valentine, vice president

H. W. Creager Mfg. Co. 314

To Exhibit—J. C. D. flexible, portable, reversible, variable speed conveyor

Representative—H. W. Creager, president

Drake, Startzman, Sheahan, Barclay Inc. 25

Distribution and materials handling consultants

Representatives—Albert B. Drake, president; Neil Drake, vice president; J. D. Sheahan, secretary and treasurer; Burr W. Hupp, staff economist

Thomas A. Edison, Inc., Storage Battery Division ... 420

To Exhibit—Edison nickel-iron-alkaline storage batteries ranging in size from a 10-cell C6 rated at 12 volts, 338 ampere-hours to a 42-cell D10 rated at 50 volts, 750 ampere-hours; cutaway shells to show internal steel construction; nickel-flake "snowstorm" machine which circulates pure nickel flakes which go into positive tubes of storage cells; production machine which forms, seams and cuts off tubes from continuous ribbon of perforated steel stock

Representatives—G. E. Stringfellow, vice president and division manager; E. W. Allen, manager of engineering; W. M. Schleicher, commercial engineer; W. B. Manson, chief application engineer; G. J. Mertz, Philadelphia district manager; G. H. Milligan, Philadelphia; H. W. Teter, Boston district manager; W. W. Gould, Cleveland district manager; E. W. Ahlstrom, Buffalo; C. B. Archibald, Pittsburgh district manager; C. A. Hornell, Pittsburgh; J. J. Hughes, St. Louis district manager; L. F. Hawkey, St. Louis; J. A. Mustard Jr., Washington, D. C., district manager; W. F. Starrett, Washington; L. E. Gunther, Richmond, Va.; A. J. Darlson, Atlanta, Ga.; H. J. Marsh Jr., Detroit district manager; H. V. Allen, Cincinnati; H. A. Drew, Chicago district manager; F. D. Lansdell, C. P. Wood, R. H. Boykin Jr., W. L. Lindner, R. D. Piper, Chicago; F. D. Van Lew, New York district manager; R. A. Leavitt, New York

Electric Products Co. 614

To Exhibit—*Four-circuit battery charger for motorized hand lift trucks, *single circuit battery charger for ride-on motive power trucks, smaller and lighter battery charger for motorized hand lift trucks and small ride-on trucks

Representatives—G. J. Berry, vice president; R. J. Peck, New York district manager; C. L. Leaf, New York office; G. J. Doss, Cleveland district manager; E. G. Schroeder, Detroit district manager; R. G. Redhead, advertising counsel

Elizabeth Iron Works Inc. 828

To Exhibit—One-man bridge ramp, Multi-Stak pallet stacker unit, Diamond torque hook, refrigerator car ramp, Master medium hand truck ramp, Star lightweight hand truck ramp, all-steel pallet

Representatives—I. L. Chanenson, sales manager; Leonard Kates, development engineer

Elwell-Parker Electric Co. 615

To Exhibit—*Type F-11TRC end control fork truck with roll paper clamp, ELN-6T telescoping high lift platform truck, C-4 crane truck, F-23T telescoping fork truck with scoop, F-15T center control fork truck with pallet retriever, *F-26T "air rights" fork truck, ELN-10 high lift platform truck with die puller, EP-6 low lift platform truck, F-19T telescoping fork truck

Erie Enameling Co. 35

To Exhibit—Porcelain enameled chutes, elevator buckets, idler rollers, pipe, valves, exhaust mufflers, etc.

Representatives—Herbert R. Spencer, president; R. E. Braggins, vice president and manager; R. W. Brownfield, sales manager, Industrial Division; John R. Chamberlin, Elmer Dodgson, Philadelphia, district representatives

Euclid Crane & Hoist Co. 732

To Exhibit—5-ton standard electric overhead crane trolley, operating model of a 1-ton electric hoist

Fab-Weld Corp. 727

To Exhibit—Trucks, live shop box, skid box with ring, *corrugated side skid box with crane lugs, pallet, skid, stainless drop bottom hopper, dump hopper

Representatives—F. W. Bruckerl, president and general manager; G. J. Hanhauser, secretary and sales manager; R. H. Moore, chief engineer; S. A. Foster, G. H. Collum, sales engineers

Fairbanks Co. 105

To Exhibit—*Minneapolis pattern steel-framed two-wheel bag truck, two-wheel rubber tired hand trucks, four-wheel rubber tired platform trucks, wheels, casters

Representatives—A. L. Naylor, executive vice president; J. S. Hanson, administrative assistant; E. T. Flanagan, manager, New York regional sales; R. G. Macbeth, sales promotion manager; S. L. Hancock Jr., manager, Rome, Ga., plant; L. H. Hancock, Rome, Ga., plant; A. T. Wendler, manager, Pittsburgh branch; C. E. Thyng, manager, Boston branch; W. F. Guthrie, H. D. Tenny, Philadelphia sales; H. J. Knapp, Baltimore sales; W. T. Rogers, New Jersey sales; A. W. Hoogs, R. A. Fournier, N. F. Unmuth, New York sales

General Electric Co. 733

To Exhibit—*ACA gear motor, 25-ton diesel-electric industrial locomotive, totally enclosed textolite fan-cooled motor, rectifier battery charger with sequence charger mounted on it, motor-generator battery charging set, control equipment for 4-circuit battery charger system, battery truck motor, control panel and master switch, photoelectric counter, pendant crane control, Tri-Clad gear motor

Representatives—C. A. Falkenau, S. W. Corbin, C. B. Elledge, J. W. Norris, R. A. Sandblom, J. J. Matson, M. A. deFerranti, S. Rifkin, C. P. Hamilton, J. T. Farrell, P. D. Ross, O. A. Tilton, W. M. Anthony, K. A. Andrew, E. D. Harrington, H. W. Bennett, C. E. Hamann, I. A. Lee, J. W. Brauns, C. MacDonald, R. N. Burgess, H. V. Green, R. H. Raube, R. B. McIlvain, A. P. Danz, E. G. Kniffen, C. S. Merrill, E. C. Brown, R. M. Gifford, W. E. Haydock, J. J. Freney, J. D. Gaughan, F. M. Krapf, O. J. Gischrest, H. D. Moore

Gerrard Steel Strapping Co. 140

To Exhibit—United States Steel Corp. will exhibit round steel strapping equipment, including a semiautomatic tying machine made by Gerrard; conveyor belts made by Cyclone Fence Division, American Steel & Wire Co.; miscellaneous items handled by United States Steel Supply Co.

Representatives—(Gerrard)—H. M. Reed, chief carload and stowage engineer; E. P. Ribet, branch manager; E. B. Kovats, assistant branch manager; W. B. Renois, general manager, sales; A. B. Margileth, branch manager; W. L. Laque, L. Howe, A. Etchingham, B. T. Ryan, F. E. Benjamin, field engineers; H. B. Aube, for Cyclone Division, American Steel & Wire Co.

A. J. Gerrard & Co. 518

To Exhibit—*Carloading tools, *balata strapping, No. 530 strap cutter, Steelbinder strap kit, special metal strapping and Stur-D-Strap and fiber-and-steel strapping

Representatives—J. M. Gerrard, president; D. F. Downing, executive vice president; Henry Wenk, vice president; Gerald D. Brennan, Eastern district sales manager; G. L. McDuell, sales representative

Getman Brothers 131

To Exhibit—Scoot-Crete, Scoot-Crete shop truck, 7-cubic foot front end loader

Representatives—D. E. Getman, manager, Manufacturing Division; Larry H. Flaherty, sales manager, Mid-Western section; John Kortz, sales manager, Michigan Industrial Truck Sales; Dan Chaffin, sales representative; Merton Jones, chief engineer

Gould Storage Battery Corp. 728

To Exhibit—*State-of-change indicator which gives a constant visual check on truck battery condition, scale model fork truck, electronic recorder which indicates each stop and go and strains involved, battery constructions: Quadruple insulation with glass tape, triple insulation with glass mats, all welded cover constructions, *sediment chamber

Representatives—M. W. Heinritz, vice president in charge of sales; H. S. Carsen, assistant to the vice president; F. A. Miller, Northeastern regional manager; W. W. Halsey, Atlantic regional manager; R. Newbury, Southern regional manager; F. G. Teufel, Cleveland regional manager; R. C. Cragg, Chicago regional manager

J. W. Greer Co. 315

To Exhibit—*Automatic belt guider, scale model of Multi-Tier

Representatives—Don S. Greer, vice president and general manager; Charles R. Becker, assistant sales manager; Rod L. Grace, Stanley J. Piwowarski, sales engineers

Harrington Co. 303

To Exhibit—Hoists, trolleys, lever pullers

Representatives—A. M. Harrington, president and general manager; J. A. Harrington, treasurer and plant manager; F. L. Evoy, secretary and assistant sales manager; D. Black, plant sales; Messrs. Nelson, Conley, Kelly, field sales

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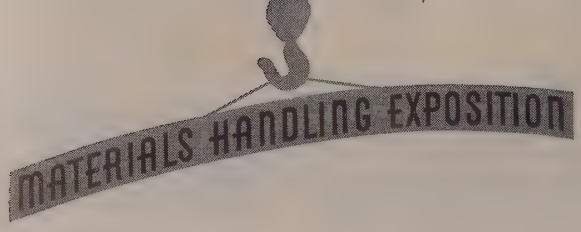


Hertner Electric Co. 224

To Exhibit—*Charg-O-Matic single circuit motor generator battery charger, multicircuit battery charger
Representatives—R. C. Nelswander, sales manager, Cleveland; R. W. Brisky, sales engineer, Cleveland; F. D. McCann, sales representative, New York; J. P. Grech, sales engineer, New York; William Smart, service engineer, Cleveland

Frank G. Hough Co. 606

To Exhibit—Model HA, HF and HL Payloaders, Payloader Buggy

Representatives—G. A. Gilbertson, vice president; Clarence E. Killebrew, sales manager; Raymond P. Wiggers, advertising manager

Hydraulic Equipment Co. 731

To Exhibit—*Hydreco four-bolt oil hydraulic gear pump, operating display of typical industrial hydraulic control system

Representatives—C. F. Rayment, sales manager; Dick Andrews, Earl Davis, Bob Hodgson, Charles Paxton

Hyster Co. 428

To Exhibit—*Load-Grab hydraulic device for palletless materials handling, *straddle truck of 18,000 pound capacity, lift trucks of 2000, 4000, 7500 and 15,000 pound capacity, mobile Karry Krane of 10,000 pound capacity

Representatives—Ernest G. Swigert, president; Eugene Caldwell, vice president and general manager; Frank Ross, vice president and manager of Eastern operations; Philip Hill, general sales manager; Ray Ronald, Western Division sales manager; C. H. Collier Jr., Eastern Division sales manager; John Johannsen, export manager; Al Zwald, chief engineer; Dar Johnson, sales promotion manager; Hal White Jr., show manager

Industrial Equipment Co. 413

To Exhibit—*Chain-O-Flex light continuous motor driven overhead conveyor, single girder motor driven, jib, single girder hand geared, single girder push type, gantry cranes and telescopic portable gantry cranes

Representatives—Paul W. Pearson, president; B. E. Peterson, production manager; Erwin T. Massa, secretary; R. T. Gustafson, general sales manager; Bert W. Bell, Earl M. Drought, John G. Volakakis, district sales managers

Industrial Washing Machine Corp. 336

To Exhibit—*Bale conveyor and loader, Bar-Tender attachment for fork trucks which, containing bundles of bar stock, can be lowered, raised and transported from bin to bin, Stak pallet for transporting, storing and tiering of materials

Representatives—Mrs. Beverly Schiffrin, Howard M. Sadwith

Inland Wire Products Co. 311

To Exhibit—Standard model Speed Stitcher in operation, *automatic adjustable stitchers for handling cartons of various sizes, *improved speed flow wire, wire tying machine

Representatives—E. A. Johnson Sr., president; E. A. Johnson Jr., sales manager; Albert Moore, field manager; Orville Tubbs, engineer; R. B. Lucks, vice president; Ted Papuga, service man; J. H. Slingerland, advertising manager

Island Equipment Corp. 207

To Exhibit—*Light medium duty belt booster, Double-Flex chain case and can conveyor, Styl-O-Veyor, portable cleated belt booster, unitized table, live roller conveyor, medium duty roller bed belt conveyor, reversible gravity, light duty gravity, medium duty belt booster

Representatives—John W. Stiles, general manager; Denny Bohn, production manager; M. Van Billiard, sales manager; G. E. A. Mercier, A. J. Haar, N. W. Gross, William Keim, Earl Whitaker, Donald Stiles, Marshall Smith, sales representatives

L & H Wood Mfg. Co. 39

To Exhibit—Wooden pallets, collapsible wooden bin boxes
Representatives—Robert B. Lindbert, owner; Vance T. Keeney, general manager

Lanham Co. 510

To Exhibit—*Re-Nu Top Steelbound skid platforms, Re-Nu Top Rollaway semilive skid platforms, Steelbound sectional bins, Steelbound skid boxes

Representatives—C. T. Lanham, president; P. B. Lanham Jr., secretary and treasurer; R. S. Piatt, sales

R. B. Latch Engineering Co. 18

To Exhibit—*Hydraulic pit lift, *25 ton 2-speed hydraulic jack
Representatives—R. B. Latch, president; Mrs. R. B. Latch, vice president; G. A. Rebok, export representative; H. Wolf, office manager

R. G. LeTourneau Inc. 809

To Exhibit—*Full revolving off-road mobile crane, EC-7 Tournacrane

Representatives—R. L. LeTourneau; Louis A. Flores, advertising manager; Richard H. Evans, service manager; Charles F. Perry, sales supervisor; and others.

G. B. Lewis Co. 701

To Exhibit—Skid boxes, stacking boxes, shipping boxes, box trucks
Representatives—Steven C. Parks, general sales manager; Milton Frater, field representative; Dan Milunovich, chief engineer; H. Riedemann, sales manager, Container Division

Lewis-Shepard Products Inc. 625

To Exhibit—*1000 pound capacity telescopic electric fork truck, working height lifter, Handy Hoister, line of power fork trucks, JackLift electric trucks, JackStacker electric tiering machines, hydraulic and mechanical hand lift trucks, portable hand and electric powered elevators, JackStacker telescopic electric tiering truck, riding type JackLift electric truck in two types—platform, with capacities of 4000 and 6000 pounds, and pallet with 1000 pound capacity, special attachments for use with Master line of Standrive electric, gas and gas-electric fork trucks
Representatives—A. L. Lewis, president; F. J. Shepard Jr., treasurer; Lyman E. Nivling, general sales manager; James Miller, manager, Crawfordsville, Ind., plant; Roland D. Jones, John P. Ascher, Howard M. Palmer, John H. Lewis, Clark Shepard, Laurence B. Barnard, Frank M. Garbarino, Philip C. Cook, William T. Cushing

Lift Trucks Inc. 114

To Exhibit—*KTL and other hand and power lift trucks, Hydroelectric K trucks with fingertip controls
Representatives—Walter C. Stuebing, president; Walter C. Stuebing Jr., A. R. Heller, A. C. Timmons, C. McCoy

Lull Mfg. Co. 723

To Exhibit—Model 4-C and 4-A Shoveloaders mounted on industrial wheel type tractors
Representatives—L. H. Lull, president; H. M. Conklin, assistant manager; R. H. Smallwood, sales manager; C. M. Strauch, advertising manager; C. H. Sheldon, service manager; I. K. Nelson, production manager; H. A. Humphries, Eastern sales representative

Lyon-Raymond Corp. 710

To Exhibit—*Hydraulic sheet feeding tables (2000 to 10,000 pound capacities), hydraulic high lift trucks, streamlined lightweight pallet truck, *adjustable tote pan lift truck
Representatives—George G. Raymond, president; George G. Raymond Jr., sales manager; William L. Peck, assistant sales manager, DeWitt W. Sprout, sales engineer; Elizabeth Culver; Madeleine Raymond, vice president; William C. House, vice president in charge of manufacturing and engineering; Christian D. Gibson, chief engineer; Frank Forsberg, factory manager; William Lamb, controller

Magline Inc. 308

To Exhibit—Magliner magnesium hand trucks, dockboards, carloading tubes and can forks
Representatives—D. C. Law, president; Ray V. Miller, vice president; Walter Bublitz, sales manager

Manning, Maxwell & Moore Inc. 726

To Exhibit—*Tugit lever operated hoist, Budgit electric hoists, chain blocks, trolleys and an electric crane in operation, built with Budgit crane assemblies
Representatives—A. R. Walkley, general sales manager; C. E. Miller, manager, Load Lifter Hoist & Crane Division; H. F. Morse, manager, Budgit Products Division; J. E. Nelson, manager, Budgit Chain Block Division; William F. Cisko, Eastern district sales manager

Mansaver Industries Inc. 14

To Exhibit—Motor driven grabs for lifting coils of steel, grabs for picking up and dumping scrap boxes

Marsh Stencil Machine Co. 29

To Exhibit—*Electric stencil cutting machine, stencil products

Mechanical Handling Systems Inc. 721

To Exhibit—Spiral type monoveyor (overhead trolley conveyor) in operation, TwinVeyor portable spiral conveyor, material handling racks, dolly for towing racks in trains, sections of chains and conveyor parts (standard and special)
Representatives—W. V. Casgrain, president; L. J. Bishop, vice president; R. R. Shelton, sales manager; J. F. O'Hora, manager, Eastern district; C. L. Moon, salesman

Mercury Mfg. Co. 324

To Exhibit—*Light duty three-wheel electric tractor, *three-wheel electric burden carrying truck, *Roto-Lift device for 4000 and 6000 pound capacity fork trucks, standard Jeep 1 ton electric fork truck, standard caster steer trailer with automatic couplers
Representatives—O. T. Henkle Jr., sales manager; P. K. McCullough, advertising manager; C. Hibbeler, sales manager, New York; sales organization members from New York, Philadelphia, Boston, Washington, Cleveland, Pittsburgh

Merrill Brothers 31

To Exhibit—Merrill-Volz plate lifting clamp, drum openers, *hand grips

Monarch Rubber Co. 3

To Exhibit—*Cushion tires, cured-on and pressed-on industrial tires, mechanical goods
Representatives—R. J. Himmelright, president; R. E. Schreiber, sales manager; J. W. Cross, assistant sales manager; J. A. Shortridge, service manager

Monroe Co. Inc. 309

To Exhibit—Swift Floor plant floor resurfacing material
Representatives—Edward I. Baker, sales manager; Paul Dudash, maintenance engineer

Monroe Auto Equipment Co. 304

To Exhibit—Lightweight all-steel pallet, drop-bottom skid box
Representatives—Brouwer D. McIntyre, president; William D. McIntyre, executive vice president and treasurer; Charles S. McIntyre; J. E. Bickel, parts and accessories division sales manager; E. N. Moore, advertising manager; Dean Willoughby, Frank Stoner, materials handling division.

Moto-Flow Co. 217

To Exhibit—*Stairlevayor winding drum type electric freight lift, cut away sections of safety devices, various working parts
Representatives—Lloyd C. Schwartz, general manager; Errol A. Schroeder, chief engineer; Roy C. Goettche, sales and advertising

Motor Generator Corp. 823

To Exhibit—Model 670-18-1 and model 672-18-IE single circuit fully automatic battery chargers, *model 672-6-4 cabinet style four-circuit fully automatic battery charger, *four-circuit sectionalized automatic battery charging panel
Representatives—D. W. Baker, sales manager; R. C. Holder, sales department; G. O. Williams, J. D. Sampson, engineering department

Moto-Truc Co. 808

To Exhibit—*Pallet truck, telescopic hi-lift truck, platform truck, *model CB hand operated counterbalance truck
Representatives—I. F. Schreck, president; E. L. Beisel, vice president and sales manager; R. C. Heiser, assistant sales manager; P. F. Schreck, plant superintendent

Multistamp Co. Inc. 52

To Exhibit—Model 1 and 3 stencil duplicators
Representative—F. W. Pennington, Multistamp Pennsylvania Co.

National Metal Edge Box Co. 718

To Exhibit—Metal edge method for packaging, materials handling and inventory control, including a display of boxes; metal edge stayer assembling the boxes
Representatives—M. P. Junkin, vice president, sales and development; Charles Paist, sales manager; J. Allen Jobes, assistant sales manager; C. H. Black, E. L. Bray, Harold Snyder, J. E. Fleagle, W. G. Muhleisen, S. H. Nicholson, C. Small, R. A. Branca

Nutting Truck & Caster Co. Inc. 333

To Exhibit—*Knuckle 4-wheel steer trailer, Safety 2-wheel knuckle-steer wagon truck, floor trucks, wheels, casters
Representatives—A. B. Morris, vice president and general manager; K. F. Heath, assistant treasurer and sales manager; G. S. Allen, secretary and traffic manager; M. A. Larson, advertising manager; R. L. Caron, sales engineer

Orangeville Mfg. Co. 622

To Exhibit—*Light and medium duty 2-wheel tubular steel trucks, 2 and 4-wheel floor trucks, all-steel one-man barrel truck
Representatives—L. C. Conner, J. C. Conner, R. C. Megargell

Otis Elevator Co. 431

To Exhibit—*Pow-R-Truck elevators, *freight elevators designed to stand up under industrial truck loading and unloading, general purpose freight elevators
Representatives—A. J. Mackrell, J. W. King, H. F. Carnell, W. F. Kroger, J. A. Warden, W. B. Tatem, W. J. Burke, H. F. Diehl, F. R. Seitz

Penton Publishing Co. 501

Publishers of *The Foundry, Machine Design, New Equipment Digest, Steel*

Powell Pressed Steel Co. 512

To Exhibit—Lift truck platforms, tiering and crane tiering box platforms, box and box platform units, one-piece tote pans, wood and steel pallets, special handling equipment, bottom-dump assemblies, all-steel collapsible container
Representatives—W. J. Powell, president; H. L. Powell, assistant vice president; H. D. Kennedy, sales engineer; A. G. Knowles, manager of sales; W. A. Glaser, sales division

Rack Engineering Co. 805-A

To Exhibit—Pallets, pallet rack, rack conveyors, bar racks, hydraulic tables, general materials handling shop equipment
Representatives—S. Saul Jr., David Gold, Paul Minich, company salesmen

Rapids-Standard Co. Inc. 112

To Exhibit—Rapid-Roller steel gravity conveyor; Rapid-Wheel gravity conveyor in aluminum and steel models; *Floor-Veyor Jr. multipurpose power belt conveyor; Floor-Veyor interfloor permanent power belt conveyor; Stevedore Jr. power belt conveyor; *Power-Veyor horizontal all-purpose power belt conveyor; Press-Veyor portable power belt conveyor used to handle stampings in press rooms; Rapistan floor trucks; Wheel-Ezy hand trucks; Rapid-Flame hardening casters; conveyor accessories
Representatives—Lloyd C. Backart, chairman of the board; James R. Sebastian, president and general manager; Howard R. Pearl, Eastern regional manager and vice president; C. Plin Mears, Western regional manager; S. C. Lloyd, Southeastern regional manager; John Kramer, Midwestern regional manager; Harvey Rasmussen, Central regional manager; Roger S. Calvert, secretary and treasurer; George R. Brockway, sales manager

Richards-Wilcox Mfg. Co. 321

To Exhibit—Zig-Zag continuous power conveyor
Representatives—E. R. Ransom, manager, OveR-Way Division; A. B. Trefethen, sales engineer, New York; C. M. Rust, manager, Philadelphia branch; R. E. Daugherty, manager, Denver office; Harry Browne Jr., sales engineer, Philadelphia

Robbins & Myers Inc. 133

To Exhibit—*Self-propelled hoists with fluid drive, operating cutaway model of standard 2-ton capacity hoist, other hoists ranging in capacity from 250 to 20,000 pounds
Representatives—W. J. Helmer, general sales manager; J. R. Mears, sales manager, Hoist Division; F. F. Seaman, general manager, Hoist Division; E. D. Koch, sales engineer; C. E. Schirmer, chief engineer, Hoist Division; A. Kreh, New York office; R. B. Kite, Philadelphia office; Elbert W. Lively, Elbert W. Lively Co., representative

Rotary Lift Co. 148

To Exhibit—*Leva-Dock adjustable ramp for loading docks
Representatives—Hugh Allan, president; Jack Sanders, sales manager; H. J. Burlington Jr., Eastern division manager

Rowe Methods Inc. 404

To Exhibit—Hydraulic equipment designed to maintain horizontal alignment between a shipping dock and trucks or trailers, either by adjusting the truck or the dock
Representatives—Arthur E. Rowe, president; Edward W. Addis, sales manager; Paul G. DuBois, service engineer

Ruger Equipment Co. Inc. 301

To Exhibit—*HP-3, *HP-18 and *Half-Tonner hydraulic cranes
Representatives—K. A. Ruger, president, Semour Schlein, chief engineer; Clarke Tryon, sales manager; Jack Neal, service manager

Saginaw Products Corp. 146

To Exhibit—*Pneumatic wheel and brake assembly, *centrifugal clutch, pneumatic wheels and casters, industrial casters, conveyor parts, chain hoist trolleys
Representatives—G. K. Mulholland, president and general manager; P. J. Zehnder, assistant sales manager; E. L. Lee, sales engineer, C. A. Hagarty, sales department

Schwitzer-Cummins Co. 337

To Exhibit—Various models of the Load Dispatcher gas powered truck of 3000 pound capacity for horizontal load movement
Representatives—James A. McDaniel, sales manager; Robert Gruen, assistant sales manager; Walter Greenhalg, service manager

Sermat Conveyor Corp. 401

To Exhibit—Flex-E-Unit steel belt conveyor (horizontal model), Flex-E-Unit power turn, Flex-E-Unit steel belt conveyor (tilted model)
Representatives—James Vani, president; Wesley A. Peterson, sales manager; Edward N. Michna, chief engineer

Service Caster & Truck Corp. 520

To Exhibit—*Maintenance lift for industrial trucks, Motowlift fork lift truck with air-expanding forks for handling unit loads without pallets, casters, floor trucks, trailers, Leverlift double-faced pallet truck, dollies, specially designed equipment
Representatives—E. C. Hamm, president; A. G. Reid, vice president; L. L. Reed, vice president; E. C. Goodall, sales manager

Sherman Paper Products Corp. 115

To Exhibit—*Jumbag machine made kraft bag for protecting furniture and major appliances, Corroflex flexible corrugated packing material, Corroflex Tube-Tainer cushioned shipping containers in continuous rolls
Representatives—George Sherman, president; D. S. Roberts, director of operations; E. W. Preston, sales manager, Industrial Division; A. G. Whitehead, field sales manager; H. W. Aubrey, assistant sales manager, Industrial Division; Paul Thompson, advertising and sales promotion manager; J. J. Connaughton, chief engineer; J. Bode, A. Bradley, G. W. Beale, J. H. Feaver, A. S. Houston, packaging engineers

Shingle & Gibb Co. 818

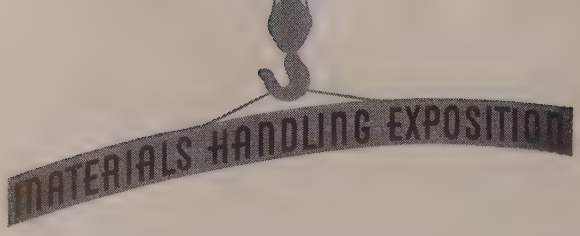
To Exhibit—*Portable all-aluminum conveyor, belt conveyor section, model of bucket elevator installation, work table, section of a spiral conveyor
Representatives—L. H. Shingle Jr., vice president and general manager; F. W. Baldt, executive vice president; T. Folger Thomas, general manager of production; John F. Muller, sales manager

Signode Steel Strapping Co. 708

To Exhibit—Model 3A fully automatic power strapping machine, hand operated strapping tools, steel strapping, seals, model A-2 automatic seal feed strapping machine, freight car door retaining strips and box car door retaining doors
Representatives—R. L. Knapp, Philadelphia district manager; J. D. Forestell, T. F. Deviney, M. W. Jones, D. W. Lukens, J. McKnight, C. C. Mehler, G. W. Numbers, J. J. O'Rourke, J. B. Remmy Jr., R. M. Taylor, G. R. Weikel, C. W. Zerman, Philadelphia sales staff; J. H. Leslie, vice president; J. W. Angell, marketing manager; E. F. Pagel, L. J. Scales, William Flanigan, J. E. Doughty, Steel Sales Division; S. N. Salomon, Pittsburgh district manager; S. W. Brown, Atlanta district manager; E. S. Lopez, Mexico City, Mexico; F. S. Anderson, manager, sales promotion.

Sisalkraft Co. 47

To Exhibit—Fibreen reinforced waterproof wrapping and packaging papers for wrapping sheet steel and aluminum, use as retainers and for unitized railroad shipping
Representatives—J. E. Harvey, vice president in charge of sales; H. Deputy, industrial department; Fred. J. Koehn, regional representative



Skarnes Engineering & Supply Inc. 819

To Exhibit—*M-2 Rol-A-Lift, 2000 pound capacity per pair with cam lift of 3¼-inches; *M-8 Rol-A-Lift, with 8-inch Divine Bros. casters and 8000-pound capacity; M-4 Rol-A-Lift with Divine Bros. 6-inch casters, 4000 pound capacity and Blackhawk J-18 hydraulic system; M-6 Rol-A-Lift, with Nutting 6-inch casters, 6000 pound capacity per pair

Representatives—R. F. Skarnes, president; Walter G. Burry, secretary-treasurer

Speedway Conveyors Inc. 201

To Exhibit—Floor-to-floor Speedbelt, 1949 model portable endless belt Speedlift conveyor, 45 degree Flipswitch, Speedglu, Speedadjust, Permajust stands

Representatives—Arnold Jacobowitz, general manager; Ralph Michaelis, superintendent; George McCumber, treasurer, Maurice Osterman; W. W. Rupple, director of Canadian sales; various Speedways distributors

Standard Conveyor Co. 706

To Exhibit—Handi-Drive, Händi-Belt, Handi-Piler, Extend-O-Veyor, free wheeling live roller conveyor

Representatives—G. W. Langevoort, E. E. Boberg, R. F. Donahower, R. E. Cummings, A. C. Towne, E. R. Lask, Robert McCauly

Stanley Works 12

To Exhibit—*Model NL all-steel reel stand with brake feature, Ace strapping tool with automatic seal feed, Eversafe steel strapping, Colorgraph strapping tools and accessories, carbanding tools and accessories, models of Uni-Tie system for pallet and skid shipments

Representatives—A. Y. Bristoll, New York metropolitan district manager; G. H. Little, Philadelphia representative; R. D. Thomas, Pittsburgh representative; B. T. Taylor, special representative; L. C. Warner, New York City representative

Sterling Bolt Co. 406

To Exhibit—Nuts, bolts, screws, rivets and washers

Stevens Appliance Truck Co. 49

To Exhibit—*Escort crawler tread hand trucks

Representatives—W. P. Stevens, Mrs. W. P. Stevens

Thermoid Co. 528

To Exhibit—Conveyor belting, V-belt, transmission belting, industrial hose, friction materials

Representatives—S. H. Lyons, vice president, Industrial Rubber Division; L. H. Leaver, vice president, sales, Industrial Rubber Division; A. F. Matheis, sales promotion manager, Industrial Rubber Division

Thew Shovel Co. 423

To Exhibit—*Wide-track TL-20 self-propelled crane

Representatives—M. B. Garber, general sales manager; Q. J. Winsor, assistant sales manager; J. T. Cushing, assistant sales manager; J. L. Beltz, manager, sales promotion; F. A. Williamson, Midwest sales manager; R. T. Maynard, export manager; R. A. Reynolds, Mid-Atlantic sales manager; D. W. Savage, Eastern sales manager

Thomas Truck & Caster Co. 106

To Exhibit—Industrial caster type trailers, industrial steel frame wagon trucks, heavy duty 20,000 pound capacity steel frame wagon truck, one-man safety type barrel trucks, caster display board, rubber-tired wheel display board, miscellaneous 2-wheel hand trucks, platform type hand trucks

Representatives—J. F. Thomas, president; Lyle B. Miller, secretary-treasurer; W. L. Hutton, vice president-sales; E. G. Murphy, Eastern district manager; Robert Huddleston, chief engineer

Towmotor Corp. 432

To Exhibit—*Model W electric hand truck, *cotton bale gripper on model LT-40 lift truck, *revolving barrel grab on model LT-44 lift truck, *roll grip-upender on model LT-48 lift truck, model LT-35 lift truck, revolving carriage on model LT-44 lift truck, unloader on model LT-44 lift truck, side shifter and concrete block forks on model LT-60 lift truck

Representatives—C. E. Smith, executive vice president; W. L. Utley, David H. Cissna, sales department; L. C. Daniels, chief engineer; Dan Wessman, service manager; Alfred H. Roth, advertising and sales promotion manager

Transitier Truck Co. 402

To Exhibit—Transitier lift truck models 147-L and 247-L in 5, 7 and 9-foot lifts

Representatives—R. Clark Hopkins, president, Transitier Sales Corp.; Frank Miller, sales manager, Transitier Sales Corp.; Howard Turpin, sales engineer; Glen M. Ede, vice president

Triangle Equipment Co. Inc. 7

To Exhibit—*Toter, *wheel-rail, Tipp cable way conveyor

Representatives—R. B. Anderson, president; R. W. Anderson, vice president; S. L. Wenograd, secretary; D. C. Reilly, engineer; L. M. Fageley

Truck-Man Inc. 137

To Exhibit—*Pallet-Toter, Truck-Man model D

Representatives—T. B. Funk, president; Ray Dunlap, vice president, W. Swindt Butterfield, treasurer; Walt Mayer, general manager; Robert Hoyt, chief engineer; Joe Kirk, engineer; M. H. Anderson, comptroller and assistant treasurer

Truscon Steel Co., Pressed Steel Division 427

To Exhibit—Steel boxes, steel platforms, combination steel boxes and platforms, steel pallets

Representatives—W. M. Whalen, general manager of sales, Pressed Steel Division; J. H. Ayre, sales manager, Material Handling Division; L. S. Todd, assistant manager, Material Handling Division; H. A. Beattie, district manager, Chicago sales office; T. G. Watkins, district manager, Detroit sales office; J. M. Keenan, Philadelphia sales office

Union Metal Mfg. Co. 620

To Exhibit—Four-way entry tiering skid box with crane lifting angles, tiering skid box with crane lugs, tiering skid box with tiering brackets, fork roll-over dump box, bar handling and storage skid, four-way entry pallet rack

Representatives—L. West Shea, manager, materials handling sales; L. E. Collins, D. E. Hammond, sales engineers

Unit Crane & Shovel Corp. 213

To Exhibit—*357 mobile crane with 4-wheel drive, full size working model of Unit one-piece cast gear case

Wayne Crane Division, American Steel Dredge Co. Inc. 716

To Exhibit—Model 22 crane which can be converted to power shovel, trench hoe, dragline, clamshell, utility crane and magnet crane

Representatives—Don L. Douglass, sales manager; Walter W. Walb, president

Jervis B. Webb Co. 421

To Exhibit—*Towveyor warehouse type floor tow conveyor

Representatives—Jervis B. Webb, president; Jervis C. Webb, treasurer; E. W. McCaul, sales manager; sales representatives

Wehle Conveyor Co. 418

To Exhibit—Floor-to-floor beltless conveyor

Representative—E. Palenik, sales manager

West Bend Equipment Corp. 122

To Exhibit—*Single stroke mechanical truck, narrow and wide models of hydraulic lift trucks, pallet type hydraulic lift truck, all-steel nesting box and skid, Weld-Bilt nesting box and skid, representative 2 and 4-wheel trucks, winding drum type portable elevator, hydraulic type electric portable elevator

Representatives—H. L. Wilkens, purchasing agent; P. A. Kessler, sales manager; C. E. Klumb, secretary

Westinghouse Electric Corp. 110

To Exhibit—*Reactor controlled rectox chargers, magnetic control for electric trucks, gearing products, Life-Line motors, Beaver control including Life-Line starters, battery charging motor-generator sets

Representatives—C. J. Schwarzer, T. C. Finnell, O. P. Adams, E. R. Maurhoff, K. T. Shaw, V. J. Kropf

Whiting Corp. 801

To Exhibit—*Trambeam crane and monorail spur, *2-ton electric chain hoist

Representatives—E. C. Rice, vice president, Materials Handling Department; R. W. Roberts, manager, monorails and light cranes, C. J. Mayo, manager, Trambeam distributor sales; B. A. Hanner, hoist sales manager; C. S. Teeple, R. E. Mahnke, L. A. Jensen, A. J. Dorsey, hoist sales

Wilshire Power Sweeper Co. 16

To Exhibit—All models of Wilshire power sweeper

Representatives—R. J. Lison, sales manager; Raymond E. Martin, sales engineer

Wood Pallet Co. Inc. 31

To Exhibit—*Indestructible stevedoring pallet, special light weight pallet, standard pallets, take-it or leave-it pallet, corner guards

Representatives—William Ballison, president; Beulah Freeman, in charge of New England sales; Theodore Held, head of engineering department; S. Silver, co-ordinator of sales

Yale & Towne Mfg. Co. 521

To Exhibit—*Electronic hoists, electric and gasoline trucks, Magnetrol bench, platform counting and crane model scales, *weight printer scale attachment, standard hoists, hand lift trucks, motorized hand lift trucks, chain hoists

Representatives—S. W. Gibb, general sales manager; J. D. Young, manager, scales sales department; C. O. Hedner, manager, hoist sales department; M. G. Peck, manager, industrial power truck sales department; W. G. Tipton, manager, hand lift and motorized hand lift truck sales department

Paul O. Young Co. 15

To Exhibit—Wood and steel Philadelphia hand trucks, Darnell wheels and casters, scale models of steel box trucks, wood box trucks, steel platform trucks, 2-wheel trucks, textile industry trucks, food industry trucks

Representatives—Paul O. Young, Robert R. Young, manager

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Fig. 11—Ladle is held in place and furnace tilted to tapping position

Production of ELECTRIC ARC FURNACE STEEL

Electric furnace operators have come to appreciate the work of several modern scientists concerned with the physical chemistry of steel making, open hearth slags and principles of slag control. These theories have been translated into everyday practice and are most important factors in the electric furnace oxidizing period

By WALTER M. FARNSWORTH
Assistant District Manager
Central Alloy District
Republic Steel Corp.
Masillon, O.

PART II

IN THE production of the various types of electric furnace quality alloy steels, a two-slag practice is generally used and is essentially the same except with regard to additions of alloys and deoxidizers. Raw materials include scrap, ferroalloys and other forms of alloying elements, oxidizing agents, carburizers, and any material used for slag making.

Scrap forms the bulk of the charge and because of the many types of alloy, stainless and carbon steels produced, it is of primary importance that various types be kept separate and carefully segregated according to analysis. This requires a system in the mills for keeping discards of different analyses separate, and also careful inspection and checking by the melting department to insure proper segregation of all incoming mill scrap and outside purchased scrap. The important reasons for proper scrap separation are: (1) To save virgin alloys by recovering as much of the alloy as possible from the scrap, (2) to avoid contamination of the steel with unwanted alloying elements. The scrap charge should be selected so that when melted it will contain only the elements desired in the steel to be produced.

Pig iron is not ordinarily used as part of the electric furnace charge except in some cases where a high carbon melt is desired. It is the usual practice to obtain the required carbon in the melt by adding anthracite coal, coke or scrap electrodes with the scrap charge. Pig iron is used principally to raise the carbon in the final stages of the heat when only a few points may be required to meet the analysis. Basic pig iron contains approximately 4.00 carbon, 1.00 silicon and 1.50 manganese with phosphorus up to 0.20. Low phosphorus pig iron of like analysis except with sulphur and phosphorus under 0.03 is generally used in quality steels where the lowest possible sulphur and phosphorus are required in the final product.

Iron oxide in the form of roll scale, iron ore or sintered ores is usually added with the scrap charge

Fig. 12—Top charge furnace—gantry arrangement removes roof and superstructure to one side for charging

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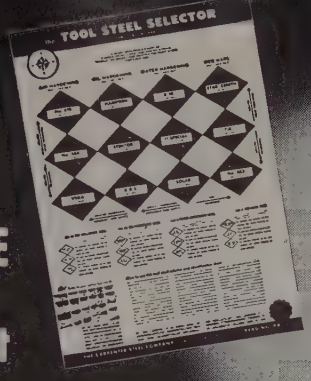

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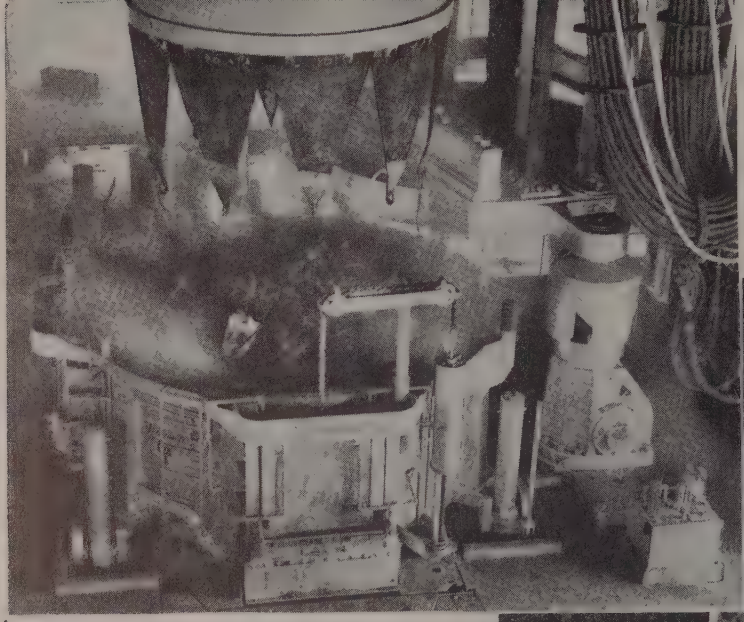

Fig. 13—Large drop bottom bucket deposits its load of scrap into furnace

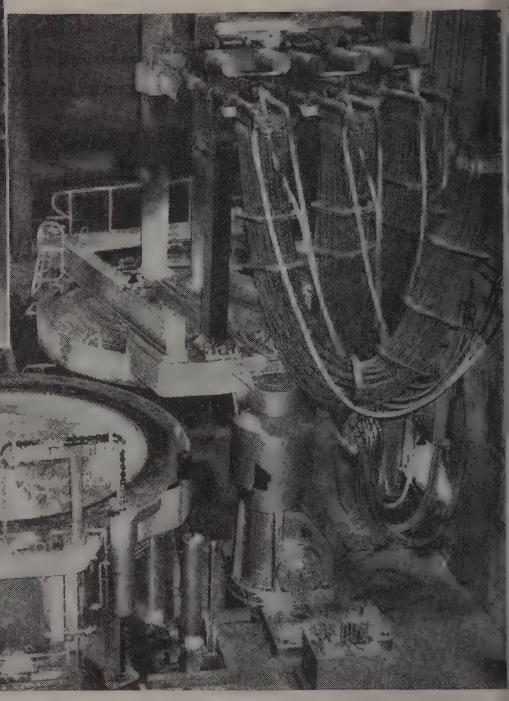

Fig. 14—Top charge furnace roof and superstructure hydraulically raised and rotated to one side. Note mass of copper cables necessary for carrying low voltage high amperage current from transformer to electrode holder

THE FUNDAMENTALS OF STEELMAKING

This is Part II of the first of a series of 27 articles on making steel and finishing it into products ready for the consumer. Watch for additional articles in this interesting and informative series

or fed in during melting. Clean roll scale is an excellent oxidizer but may contain some undesirable alloying elements if obtained from mills rolling alloy steel. Lump red ore is used extensively but care must be taken when charged with the scrap to keep it from under the electrodes. It will not support the arc and may cause electrode breakage. Sintered magnetite ore is ideal because of its purity, high iron oxide content and electrical conductivity sufficient to support the arc.

In basic furnace practice, lime is the principal slag forming component. Raw lime is used to some extent in the initial slag but generally burnt (calcined) lime is used in both the initial and finishing slags. Other materials used for shaping and treating the slag are fluorspar, silica sand, crushed coke, aluminum and silicon. High commercial purity is desirable in all slag making materials.

In charging the furnace, it is desirable that the scrap be of such density that all of it can be charged in one operation or with a minimum of recharging after the scrap is melted. Scrap should be arranged with the heavy pieces on the bottom so as to protect the bottom refractories from the intense heat of the arc until a pool of metal is formed. Light scrap on top gives better contact for the electrodes. Placing of the scrap in the furnace and the proper proportion of light and heavy scrap are important from a stand point of bottom difficulties and rapid melting.

In making high-nickel or molybdenum steels, a large portion of the nickel or molybdenum may be charged with the scrap. Nickel and molybdenum are not oxidizable; that is, they are stable in an oxidized bath and there is no loss from oxidation. An excess of carbon in the form of anthracite coal, coke or scrap electrode is charged with the scrap so as to produce a vigorous boil with the addition of iron ore. Lime, which forms the basis of the oxidizing slag, is added with the scrap charge and during melting. Charging of large amounts of lime or limestone with the scrap will retard melting. Lime required for the oxidizing slag is generally 1½ to 2½ per cent of the scrap charged depending on the type of scrap used.

For the first 20 or 30 minutes of melting, the current through the furnace fluctuates widely as the electrodes arc down through the scrap. This fluctuation quiets down when the electrodes have reached almost to the bottom of the furnace and a pool of molten metal has formed under them. After the pool of metal is formed, movement of the electrodes is upward as the scrap melts and falls in. High voltage is used for the first period of melting. This high voltage throws a larger arc and will damage side walls and roof if used after the scrap is under cover. Intermediate voltage is used when charge is partly melted and low voltage when completely melted.

The lime and ore added with the charge and during melting form an oxidizing slag. The reaction between carbon in the metal and the iron oxide creates a vigorous boil which results in the oxidation of

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Fig. 15—Operating side of modern electric arc furnace. Burnt dolomite for patching hearth is stored between rails on which charging machine travels

carbon. During this oxidizing period, phosphorous and other oxidizable elements such as silicon, manganese, chromium, etc., react to form oxides and revert to the slag. At the same time some sulphur is taken into the slag as calcium sulphide. Oxidizing conditions at this period are similar and have no particular advantage over the open hearth process except that all oxygen introduced is in the solid form as iron ore, and can be controlled whereas the amount of air admitted to the open hearth limits the control of oxygen.

The amount of iron oxide in the slag and the V-ratio (ratio of CaO to SiO_2) can be closely controlled; moreover, chemical composition of the slag can be held much more constant than is possible in the open hearth where there is a constant flow of oxidizing gases prevalent at all times during the operation.

The electric furnace operator has come to appreciate the work of several modern scientists concerned with the physical chemistry of steel making, open hearth slags and principles of slag control. These theories have been translated into everyday practice and are important factors in the electric furnace oxidizing period. It has been proven that oxidation goes far beyond the removal of carbon, phosphorus and silicon—it insures a low hydrogen content and freedom from excessive amounts of nonmetallic inclusions. For this reason it is desirable to have an excess of carbon in the charge in order to obtain an active boil after melting. Iron oxide in the slag has a much closer relation to the carbon content of the bath than any other factor. In 1 per cent carbon steel the iron oxide content of the slag will range between 5 and 10 per cent or if the carbon content is down to 0.05 the iron oxide content may be 25 to 30 per cent.

A high lime silica ratio of over 2.5 is desirable in melt down slags. Basicity of the slag depends entirely on amount of silicon in the charge and the amount of lime added. These factors can be closely controlled by the elctric furnace operator. The lime silica ratio and iron oxide content can be estimated from the appearance of slag pancakes; also spectrographic and chemical analysis can be obtained within 10 or 15 minutes. Samples of the metal bath are usually taken for analysis both after melting and before tapping.

Removal of the oxidizing slag, after oxidizing reactions have taken place, is termed slagging off and is accomplished by tilting the furnace backward to permit slag to run off through the charging door, then wood or steel rabbles are used to rake the slag off clean. After slag off, preliminary additions of carbon and necessary alloys are made. These are added in amounts based on laboratory findings, to bring the metal bath up to the low side of the specification required in the finished steel.

When much oxygen is present in melting and early refining, the bath will contain more or less of dissolved or entrapped oxides. These oxides are usually silicates, manganese and chrome silicates and may show up in the finished steel as nonmetallic inclusions. Next step is deoxidizing or refining slag. Its function is to get rid of these entrapped oxides, to deoxidize and desulphurize the bath.

This refining slag is made up of lime, fluorspar, silica sand and crushed coke. The fluorspar and sand assist fluidity and are used in proper amounts to form the quickest possible flux with the lime. A total slag volume amounting to 2 per cent of the metal bath is usually satisfactory unless there is considerable sulphur to be removed. Crushed coke is spread over the top of the slag to avoid carbon pick up in the bath. The coke, when fused with the lime, forms calcium carbide—the object being to form a strongly reducing slag containing over 2 per cent calcium carbide and maintain it throughout the refining period. Small additions of coke are made at intervals to maintain this condition.

When calcium carbide is formed, metallic oxides in the slag are first reduced, then when the slag is

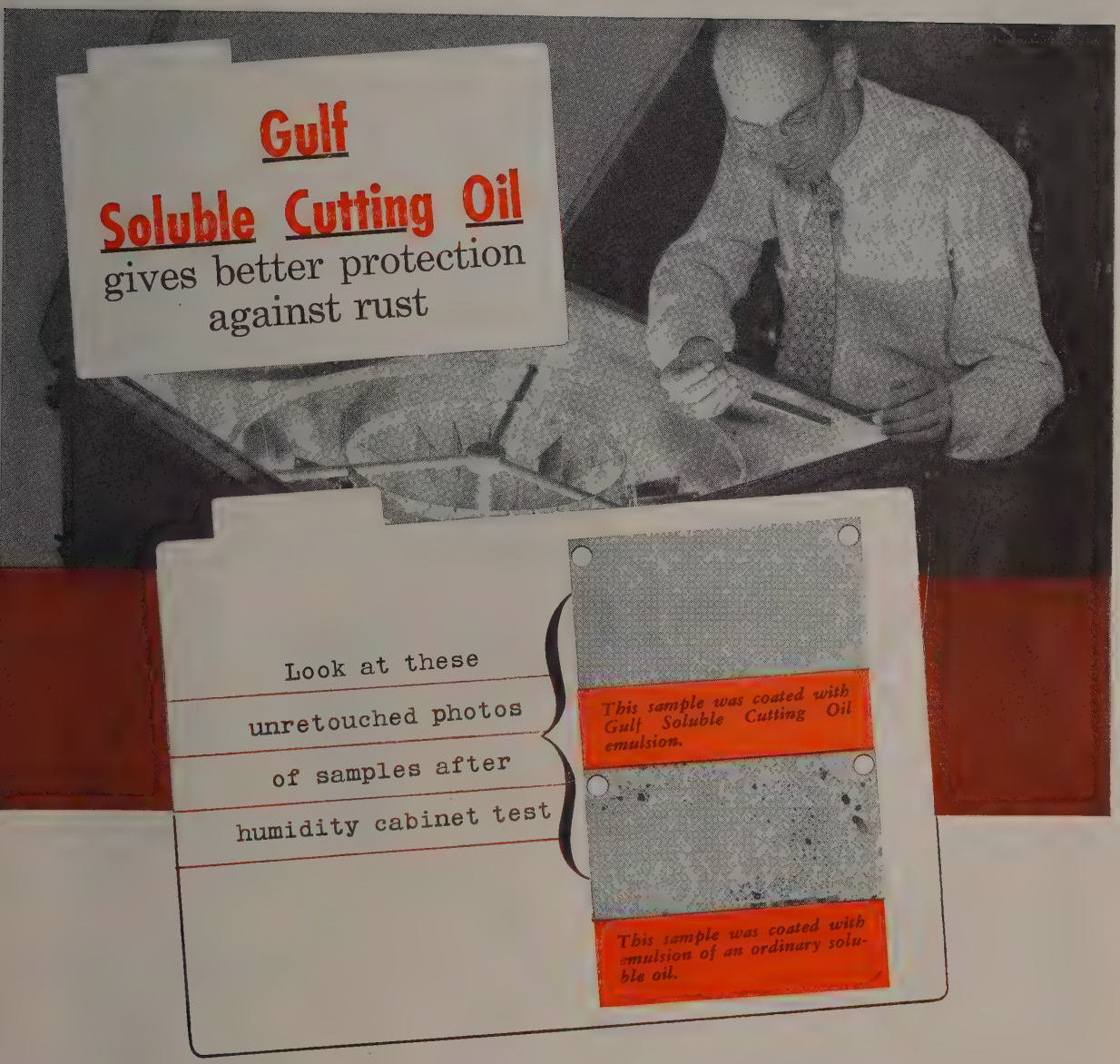
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Fig. 16—Furnace being charged by means of conventional open hearth charging machine

free from these oxides it reacts to remove sulphur and dissolved oxides from the bath.

Many of the elements in steel such as carbon, manganese, silicon, chromium, etc., are oxidizable at melting temperatures. That is, they are not stable in an oxidizing atmosphere—cannot be conserved in the bath under oxidizing furnace conditions such as a flame or fuel fired furnace. Under an electric furnace reducing slag they can be added in any amounts with little or no loss. This permits finishing the steel in the furnace, produces greater uniformity and makes it easier and possible to hold to closer limits of analysis.

Temperature control in the various steps of melting and refining is highly important and only within the last few years has an instrument been provided that will measure the temperature of the metal bath in the furnace. Heretofore, the melter had to depend on his judgment through experience in observing metal poured from the test spoon or by stirring the bath with low carbon bars and counting the seconds elapsed before burning off. An immersion pyrometer, now widely used, consists of a platinum rhodium thermocouple protected by a silica tube and a graphite plug fitted in the end of an insulated pipe through which is attached lead wires. The lead wires from the pipe handle are connected to an electronic pyrometer on which bath temperature is indicated on a dial. A permanent record of the temperature reading is also made on a circular chart. For taking temperatures the thermocouple is immersed in the metal bath to a depth of approximately 10 inches.

It is important to have the metal bath at the proper temperature during the oxidizing period, before slag off, during the refining period when alloy additions are made and before tapping. Furnace practice and sequence of alloy additions have been established by experience gained in the application of the various steels. Silicon is usually added just prior to tapping. Aluminum is added at a time and in amounts consistent with the results desired especially with regard to grain size. This addition has been carefully worked out and must be accurately controlled.

Up to this point the foregoing description covers procedure followed in the production of normal electric furnace alloy steels where quality requirements are of prime importance. Such heats made in the 70-ton furnace may require from seven to nine hours to produce depending on the type of scrap charged and the amount of refining necessary to meet desired specification.

In order to meet the great demand for alloy steels during the war, electric furnaces were operated in duplex with open hearths. Molten metal from the open hearth was transferred in ladles and poured into the electric furnaces by means of a runner spout in the charging door of the furnace. The oxidizing and refining procedure were carried out in much the same manner as a cold scrap charge. Less than half the time was required to produce the heats with a proportionate lowering of power and electrode consumption.

Melting procedures may vary considerably in the production of tool, stainless and also heat resistant steels.

When, in 1913, Harry Brearley made the important discovery of the corrosion-resistance of high-chromium steels, there were several varieties of ferrochrome on the market, the variable being the percentage of carbon. Chromium has a very great affinity for carbon so that it is quite difficult to produce alloys rich in chromium, and, at the same time, comparatively free from carbon. At that time the lowest carbon ferrochrome contained about 0.80 carbon and 60 per cent chromium. With such an alloy it was not possible to produce a stainless steel containing over 12 per cent chromium and less than 0.20 carbon.

There were some very low carbon chromium alloys on the market at that time produced by the thermit process. These were not being produced in any quantity and were very expensive. Since the first commercial application of stainless steel was for cutlery in which the most suitable carbon content is in the neighborhood of 0.30, the need for lower carbon chromium was not considered urgent at that time. Then during World War I, most of the stainless output was used for manufacture of aircraft engine valves in which a carbon content of 0.30 was considered advantageous.

After the close of World War I, a low carbon ferrochrome containing less than 0.10 carbon and 70 per

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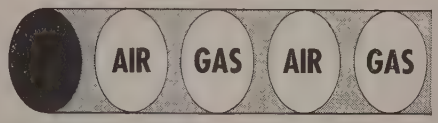

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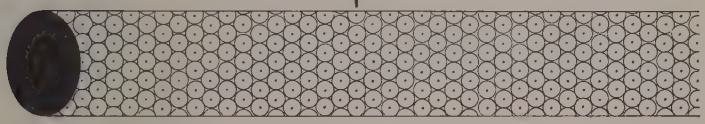

View of gas pressure governor, part of air inlet and air check valve, mixing chamber and turbo-compressor.

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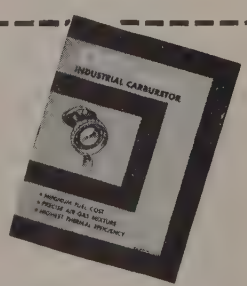

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cent chromium was produced by the electric furnace process at a reasonably economical price. Stainless steel containing less than 0.10 carbon and 18.00 chromium could be produced with this alloy. It was found that this low carbon stainless steel gave physical properties suitable for many purposes for which the higher carbon could not be used and could subsequently be worked with greater ease. Major portion of all stainless steel tonnage produced today is under 0.12 carbon, and a large tonnage of the chrome-nickel grades is produced with a carbon limit of 0.07 maximum.

In our earliest experience with melting of stainless steels, the most difficult problem was to maintain carbon within the low limits required, and it was some time before a satisfactory practice was developed for remelting stainless scrap in the arc furnace.

Ordinary common scrap may be melted in the arc furnace with no appreciable carbon pick up. If some carbon is absorbed, it is easily oxidized with small additions of ore or roll scale. After the bath is melted and covered with a protective coating of slag, there is little or no danger of carbon absorption from the electrodes.

Because of the low carbon requirement, crushed coke cannot be used as a reducing agent in the finishing slag. Other reducing agents such as silicon or aluminum are used and of these silicon is usually preferred. Lime-silica and lime-alumina slags, when properly shaped up, will disintegrate to a white powder when cooled.

To oxidize the carbon in a charge containing a high percentage of stainless scrap requires an excess of iron oxide and an extremely high temperature (over 3200° F). Considerable chromium is oxidized and the resultant slag will contain a high percentage of chrome oxide. In order to obtain a maximum recovery of chromium, this chrome oxide slag is reduced with additions of lime and crushed silicon to return the available chromium back to the metal bath.

There are some stainless grades of the austenitic type (Cr-Ni) to which are added such elements as titanium and columbium. These elements are used to prevent carbide separation in the grain boundaries when heated to high temperature. Both titanium and columbium are strong carbide formers and therefore make the steel less susceptible to intergranular corrosion by preventing carbide separation. Both of these elements are used in special stainless steels and the practice of adding them is very critical because of their instability under reducing slag conditions.

In the grades containing titanium, this element must amount to at least four times the carbon present to be effective. The usual specification is 0.07 maximum carbon with 0.50 minimum titanium. To avoid excessive oxidation loss requires a very careful furnace practice. The loss may be kept at a minimum by having a small slag volume in the furnace when the titanium alloy is added.

Since titanium is so easily oxidizable and stainless sheets containing this element may show bad inclusions, it is sometimes preferable to use columbium. This element is not so easily oxidizable and therefore

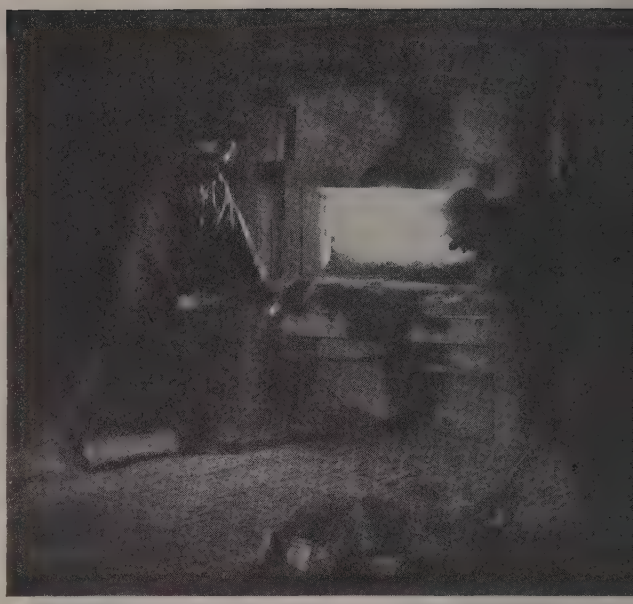


Fig. 17—Alloying additions are made after being carefully weighed to bring the metal bath within the desired chemical specification

is to be preferred for certain applications. Columbium is added in the form of ferrocolumbium and the usual recovery in this metal bath is 100 per cent of the amount added, if the temperature of the bath and slag is in proper condition.

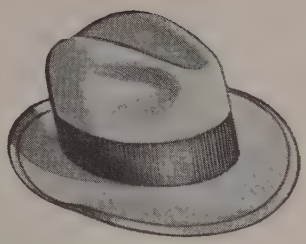
Stainless steels have a high affinity for hydrogen at melting temperature. Hydrogen may be absorbed from the decomposition of moisture under the action of the furnace arc. Moisture may come from wet materials added in the furnace or leaks from the furnace cooling system. Further it has been noticed that this condition is most critical during humid weather. Every precaution is taken to dry materials and avoid the introduction of hydrogen into the furnace.

When an appreciable amount of hydrogen is absorbed in a stainless melt, it will remain in solution until the metal is cast into molds. It is then given off during solidification and results in bleeding and porosity. This condition can be observed in spoon samples taken from the furnace and poured into test molds.

Use of argon gas for flushing hydrogen from the metal bath is comparatively new. It is injected into the metal bath through a ½-inch pipe which is submerged close to the furnace bottom. The argon bubbles rising to the surface of the bath carry off the hydrogen. This gas seems to have no ill effect upon the steel and some good results have been obtained. However, it has not proven entirely foolproof. Some heats that have been flushed with argon and appeared to be free of hydrogen have shown bleeding and porosity after being cast into the ingot mold. This may be due to the tendency of hydrogen to segregate in the metal bath at such a level as not to show up in test samples taken from the furnace.

Normal alloy and stainless heats are handled in much the same manner with respect to tapping and

SEVEN HEADS ARE BETTER THAN ONE . . . . .



. . . . especially when it's *your* spring those heads are concentrating on. Whether it's a matter of material, design, method of manufacture or deliveries, it's to your advantage to know that the best skills in the craft are instantly ready for group consultation and action.

Make these plants your partners in mechanical progress.

SPRINGS
SMALL STAMPINGS
WIRE FORMS

ORIGINAL DIVISIONS OF ASSOCIATED SPRING CORPORATION
WALLACE BARNES COMPANY
BRISTOL, CONNECTICUT
THE WILLIAM D. GIBSON COMPANY
1800 CLYBOURN AVE. CHICAGO 14,
RAYMOND Manufacturing COMPANY
CORRY, PENNSYLVANIA
BARNES - GIBSON - RAYMOND
6400 MILLER AVE., DETROIT 11, and ANN ARBOR, MICH.
. . . . AND DUNBAR BROTHERS COMPANY DIVISION, BRISTOL, CONN.
OHIO DIVISION, 1712 EAST FIRST STREET, DAYTON, OHIO
IN CANADA, THE WALLACE BARNES CO., LTD., HAMILTON, ONT.

pouring. All precautions are taken to prevent contamination of the metal. The furnace is tilted at such a rate as to keep the slag level above the tap hole, thus holding back the slag until the tap is complete.

Ladles used are of the bottom pour type with a mechanism affixed to the side for operating the stopper rod. Particular consideration is given to the selection of brick used for the ladle lining from a standpoint of high temperature softening and spalling. The same consideration is given to the stopper rod sleeves, stopper heads and nozzles. The ladles are thoroughly cleaned and heated before using. In pouring, necessary care is exercised to pour at the proper rate to avoid splash and insure good ingot surface. Normal alloy and stainless heats are cast into molds of various sizes and design. Ordinarily ingot molds designed to avoid cracks in normal alloy steel will be satisfactory in stainless steel. The size ingot in most cases is governed by the size of the finished product and in some cases by blooming mill limitations. In preparing molds for normal alloy heats, a pitch coating is applied to the inside surface. In stainless heats, an aluminum coating is sometimes used instead of the pitch to avoid any possible carbon pickup.

The ingot molds are made of iron and have a smooth inside surface which is tapered, being about

Fig. 18—Taking temperature of steel with optical pyrometer as it is being teemed from the ladle into ingot molds

Century

WOUND ROTOR MACHINES

Are Available for *MANY* Industrial Uses . . .

Illustrating Century Line of Wound Rotor Machines (with covers).

For *Compressors • Cranes • Hoists • Bending Rolls • Refrigerators • Bridges • Synchro-Speed Drives • Printing Presses • High Frequency Current*

Century Polyphase Wound Rotor machines are adaptable to many applications that require

1. Adjustable varying speeds or reversing direction of rotation — such as bending rolls, fans and blowers, newspaper printing presses, etc.
2. Synchro-speed, multiple drives to be used when two or more industrial operations must be synchronized.
3. Converters — to supply high frequency current for high speed electric motor-driven machines and hand tools.
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Century Electric Wound Rotor Machines are built in sizes up to 400 horsepower and are available in open protected or splash proof frames.

Century builds a complete line of electric motors in a wide range of types and kinds, in sizes from 1/6 to 400 horsepower.

Specify Century motors for all your electric power requirements.

Popular types and ratings are available from factory and branch office stocks.

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CENTURY ELECTRIC COMPANY • 1806 Pine St. • St. Louis 3, Mo.

Offices and Stock Points in Principal Cities

CE-603

2 to 2½ inches larger at the top than at the bottom (so called "big end-up molds"). This taper facilitates freezing from the bottom up. The larger cross-section at the top is last to freeze. When the heat is poured into the molds the metal next to the bottom and mold walls freezes first. Solidification then takes place gradually toward the center and upward. Contraction of the metal on solidifying will cause segregation and a cone shaped cavity known as pipe to form in the last part of the ingot to freeze. To eliminate this cavity, a sink head, commonly called a "hot-top", is used. The "hot-top" is made of refractory material and fitted into the top of the mold. It keeps the metal in a molten state until the ingot proper is entirely solidified. Thus, any pipe and segregation is brought up into the hot-top section. This end of the ingot is cropped off and discarded before rolling.

Arc furnace operators find another important method of production in the electric furnace is the so-called single slag practice wherein oxidizing slag conditions similar to open hearth practice are maintained. A considerable tonnage of rimmed, semi-killed and fully killed steels have been produced by this method with very good results. These are open hearth grades of steel that do not require super-electric furnace refining. That is, the slag-off and refining period is eliminated. Such heats are produced in less time and at a lower cost than regular electric furnace grades.

The major items of electric furnace costs are power, electrodes, labor, refractories and maintenance. In the interest of improving costs, increased production per furnace is of prime importance. Main items that influence production are charging time, melting time, refining time and time lost by delays.

Faster charging and melting will increase production and reflect considerable reduction in the cost of labor, refractories and maintenance, but will not to the same extent reduce power and electrode consumption.

Many of the small and medium sized furnaces are

Fig. 19—Tapping side of furnaces. Ingot molds with hot-tops are lined up along the pouring platform

equipped with a removable roof for top charging. This feature permits much faster charging than with the conventional open hearth charging machine. Several arrangements are used for removing the roof: One uses a gantry crane arrangement for lifting the roof and superstructure and moving it to one side; another uses a hydraulic cylinder mechanism which lifts and rotates the roof and superstructure to one side. Large drop bottom buckets are used to deliver scrap into the furnaces. Usually one or two buckets will fill the furnace. Because of the decided influence charging time has on overall furnace production, this top charge feature is now being considered for use with large 70-ton furnaces.

A great deal of progress is being made in improvement of current regulators and in larger transformers for increasing power input. With these improvements for greater production per furnace, it should be possible to narrow the range between open hearth and electric furnace cost of ingot production.

Fig. 20—Operator is preparing to insert immersion pyrometer into furnace for measuring temperature of the molten steel bath

LUKENS HEADS

ANY SIZE · ANY STYLE · ANY MATERIAL

What heads do you need? Lukens can ship many sizes from stock and hundreds of dies are available for forming others. Write for prices and shipping dates, giving head diameters, gages, styles and materials. Lukens Steel Company, 414 Lukens Building, Coatesville, Pennsylvania.

LUKENS HEADS ★

...of interest to you... "HEAD WORK", a 16mm motion picture in sound and color, on spinning and pressing of Lukens Heads is available without charge. Running time: 27 minutes. Write for a booking date.

FOUR INCHES TO OVER TWENTY FEET IN DIAMETER

• • SPEED SCRAP TO THE MILLS TO MAKE MORE STEEL • •

Wire Production Control

. . . aided by new rotating beam fatigue testing machine

NEW development in rotating-beam fatigue testing machines promises to give the wire producer, user, buyer and wire-forms designer fatigue data accurate well within one per cent error, with greater speed than heretofore obtainable. The instrument permits new applications of fatigue knowledge to: Control charting of wire drawing processes, wire acceptance on the basis of statistical analyses of fatigue data, studying variation of fatigue characteristics throughout a wire lot, research studies in the fatigue field, predicting wire life in dynamic service, using fatigue strengths and endurance limits as quality indexes, more efficient determination of safety factors in design, and determination of fatigue characteristics of small wire as a basis of design involving wire forms and parts.

Developed by Hunter Spring Co., Lansdale, Pa., the tester's design involves looping a sample of predetermined length through a complete 180 degrees so that the bending stress (at the peak of the loop) can be perfectly predicted, simply calculated and brought to as great a value as desired in order to hasten specimen failure. The machine is adaptable to wire from 0.005 to 0.003-inch in diameter. The apparatus is said to be so simple that operators with no experience in operating physical testing equipment can perform all the necessary calculations, set up for a test and complete it without special training.

Instrument consists simply of a motor driven chuck (3600 revolutions per minute) and bushings to position that end of the sample which is not clamped in the chuck. The bushing can be positioned with vernier accuracy to 0.001-inch. The supporting guides mounted on Alnico magnets hold the specimen in a horizontal plane, prevent vibration, and are quickly but securely positioned anywhere on the steel apron of the instrument.

Revolutions of the synchronous motor are accurately counted by a Telechron timer read in tenths of a minute. The test is automatically terminated as the specimen breaks and actuates an electronic circuit to stop the motor and the timer simultaneously.

Carbide Milling Effects Time Savings

Considerable savings in time were reported by Whitin Machine Works, Whitinsville, Mass., when it converted an operation on long, narrow L-shaped cast iron beams from gang planing to high speed carbide milling. The operation consisted of finish milling the two outer sides and the two edges of roller beams, used in the construction of large cotton spinning frames. Beams measured 2½ x 3-9/16 inches by 14 feet long and had a 190 brinell hardness.

Installed was a special Ingersoll milling machine designed for carbide milling. It was equipped with hydraulic clamps to decrease loading time. Each of the two heads—one vertical, one horizontal—was equipped with Carboloy cemented carbide grade 44A. Cutter blades range up to 6 inches in length.

Roller beams are milled one at a time. One side and one edge are machined in 1 minute in one pass, then the other side and edge are machined in 1 minute in one pass. Depth of cut on both sides and edges is about ⅛-inch and cutting speed is 150 surface feet per minute. Feed is at the rate of 168 inches per minute.

Steel Delivered With Heat Treatment Guide

Guesswork in heating operations, whether it be forging or heat treatment, is removed from the processing of alloy steel delivered by United States Steel Supply Co., through the use of a practical heat treating guide in card form, furnished with the steel. Furnished with a cellophane jacket for filing, the card guide contains, in addition to the general information describing the particular lot of steel it covers, data on chemical composition, recommended working temperatures, physical properties and end quench hardenability data.

General information includes th heat number, a positive means o identification through a serial numbe assigned to each heat of steel manu factured. Each grade and condition of steel is identified with a colo marking. Also included on the car is a number indicating the actua austenitic grain size of the steel de livered to the customer, as determine by several tests made on sample from each heat.

Also to be found are the maximun brinell hardness number, the best an nealing practice, the chemical com position and the recommended work ing temperatures for forging, normal izing, annealing and quenching. Thes data, like all other contained on th cards, have been developed from ac tual tests made in laboratories.

The company has divided allo steels into three general group (Thorough hardening, heat treated an carburizing steels). Each type o card is identical except for the sec tion covering physical properties.

Melt Welding

(*Concluded from Page 60*)

ment for mounting and jigging to permit the use of the process on special work Fig. 1 shows the welding head on a low gantry making circumferential welds on a section of piling which combines pipe and I beams. The specially made carriage straddles the work and is positioned by hand for each weld. The pipe rests on turning rolls that are driven by an electric motor operating through a reduction unit constructed of spare parts.

Where extremely heavy sections are being fabricated, fillet welds and double vees can be avoided by using rolled stub sections on cast or prefabricated members and welding on heavy plates using a butt weld. Fig. 8 shows how this was done in the fabrication of a rather complex frame for a diesel engine.

Speed, uniformity and deep penetration of submerged melt welding made it particularly suited to the fabrication of structural sections. Of course, welded fabrication offers no competition where standard rolled sections are available. However, since the cost of weld-fabricating almost any desired section is so low, it is now economically practical for the engineer to specify the type of structure that is actually best suited for the job at hand. For instance, the engineer can specify box or reentrant sections that could not be produced by rolling. Standard H and I beams can be made to the exact size required and even tapered sections, whether of I, H, box or tabular form, are easily made.

In some of the larger structures where numerous stiffeners or diaphragms are used, the process and automatic equipment make it possible to weld through openings and in spaces where an operator could not gain access. The accessory equipment required need not be complex or prohibitively costly.

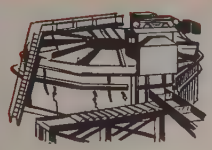
—o—

"Some Recent Developments in Heat Transfer" is the title of the engineering bulletin, research series No. 104, published by the Engineering Experiment Station of Purdue University, Lafayette, Ind. Three lectures, all by Dr. W. H. McAdams of the department of chemical engineering, Massachusetts Institute of Technology, are included. Lecture topics are: Analytical methods; boiling liquids; and heat transfer for compressible flow of air.

GASMACO INDUSTRIAL FURNACES

OIL or GAS FIRED for ALL TYPES of HEAT TREATING

DOUGHNUT ROTARY HEARTH FURNACES



This particular furnace has baffle walls to shield controlled heating zones from high temperatures of the combustion zone, providing more accurate, uniform heating. Special insulation provides faster heating with minimum wall losses for fuel economy. Automatic charging and discharging machinery reduces labor requirements.

BOX TYPE FURNACES

Built to specification for sintering, brazing, bright forging, annealing, hardening and draw. Designed to meet the increasing need for prepared atmospheres which will discharge material free from scale or surface decarburization. Furnished in continuous, semi-continuous or batch type for fuel fired furnaces.

RADIANT TUBE FIRED ROLLER HEARTH FURNACES

An exclusive feature of these furnaces is the Carbofrax* Tubes and Rollers which permit firing in excess of 2500° F, with fewer replacements. Complete control of the furnace atmosphere is provided. Annealing is accomplished without decarburization or scale in simple, inexpensive car, pusher, conveyor, chain or roller hearth type furnaces.

CONTROLLED ATMOSPHERE CAR TYPE FURNACES

Simply designed for long, trouble-free service and little or no maintenance. Equipped to handle material of nearly any size, shape and height. Ideally suited for heat treating, spheroidizing and annealing applications.

"CARBOFRAX" is a registered trade-mark indicating manufacture by the Carborundum Co.

All GASMACO furnaces are individually designed to fit your particular furnace requirements to assure maximum operating economy. It will pay you to investigate these furnaces for your next heat-treating job.

THE GAS MACHINERY COMPANY

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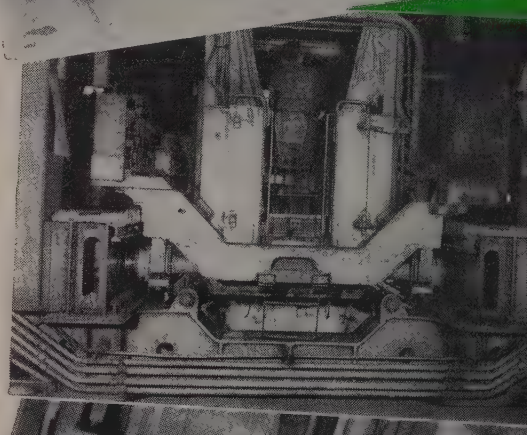
CLEVELAND 10, OHIO

Designers . . Fabricators . . Erectors
Gas Plant Equipment and
Industrial Furnaces

Alliance
OPEN HEARTH CHARGING MACHINES

A

B



C

D

E

Feature

A All gears and pinions operate in a bath of oil.

All mechanical parts and motors easily accessible.

Main girder consists of two wide flange beams welded to form a box section with diaphragms spaced approximately 3″ apart. Shown in detail in View "C."

Auxiliary girder wide flange beam.

Bridge machinery deck plate fastened to bottom of main and auxiliary girders and end truck gives necessary lateral stiffness and provides space for gear boxes, motors and control equipment.

Heavy buffer plates at front of charger protects ends of girders from projecting charging boxes.

Flexible coupling installed between all motors and gear boxes.

B Adequate clearance between bottom of girder and charging floor allows machine to pass over charging boxes and miscellaneous materials.

Operator has clear view of charging floor.

C Operator controls charging machine from seated position.

Magnetic controls and hydraulically operated lock rod give operator fingertip control of all motions.

Two sets of wheels at rear of trolley, one set bearing against lower rails and the other set bearing against the upper rails, protect the operator from shock.

D Operator's unobstructed view of furnace door, charging box and peel.

E Spring loaded pitman on hoist motion prevents breakage of peel.

THE ALLIANCE MACHINE COMPANY

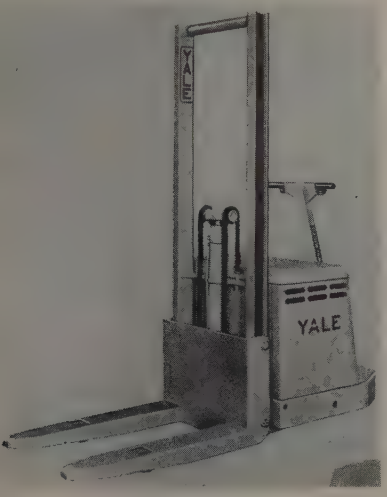
MAIN OFFICE
ALLIANCE, OHIO

PITTSBURGH OFFICE
1622 OLIVER BUILDING, PITTSBURGH, PA.

New Products and Equipment

Pallet Truck

Pallets may be lifted 66 inches for overhead tiering with the 2500 pound capacity electric pallet truck, the Worksaver, offered by Philadelphia Division of Yale & Towne Mfg. Co, 4530 Tacony St., Philadelphia 24, Pa. Battery operated for both travel and



lifting, the truck measures 39 x 31 inches, not including the forks.

Mast of the truck is 83 inches high, permitting the truck to enter such low head room spaces as street trucks and freight cars. Weighing but 1965 pounds it can be used on low capacity floors, in elevators, etc. Small overall dimensions allow for use in confined areas, narrow aisles, etc.

Check No. 1 on Reply Card for more Details

X-Ray Diffraction Unit

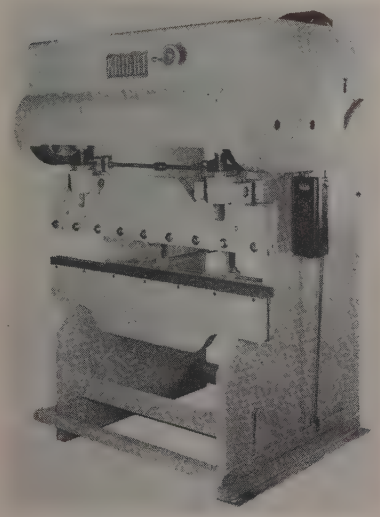
Metals and alloys may be classified and identified for grain size, orientation, effects of rolling, drawing, annealing, fatigue, aging and other physical and chemical changes with the high intensity water cooled x-ray diffraction unit and high intensity, high angle spectrometer announced by North American Philips Co. Inc., 100 East 42nd St., New York 17, N. Y. The unit incorporates a high capacity full wave rectified high voltage generator, a new automatic control system and a control panel with kilovolt and milliampere meters, improved cooling system and a new type automatic beam shutter.

As many as four different diffraction cameras may be operated simultaneously on the unit. The Norelco 180-degree high intensity high angle Geiger counter x-ray spectrometer may be attached to the water cooled diffraction unit, in units of one or two. As many as three different diffraction cameras may be used with one spectrometer unit at a time. The electronic circuits may also be used for fluorescence analysis equipment and for radioactivity studies.

Check No. 2 on Reply Card for more Details

Press Brake

Of all steel and welded construction the model 14B72 press brake built by Knight Machinery Co., Indianapolis, Ind., has a rated capacity of 6 feet of 14 gage mild steel. Servicing, lubrication and necessary repairs can be carried out without



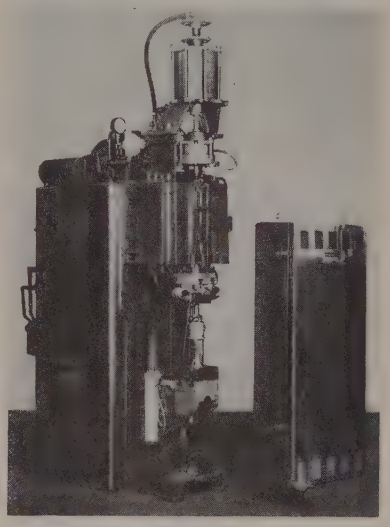
disassembling the machine. It is equipped with Zerk-Alemite fittings, Cutler-Hammer controls, Reeves variable pitch pulley drives, Westinghouse motors and Twin-Disc clutches.

Check No. 3 on Reply Card for more Details

Welding Systems

Standard spot, projection, seam and flash welders and special purpose resistance welders made by Thomson Electric Welder Co., 163 Pleasant St., Lynn, Mass., are now available with the company's "balanced load" three-phase converter system. It supplies low frequency, single-phase current for resistance welding while placing an evenly balanced moderate demand on a standard three-phase, 60 cycle 220, 440 or 550 volt primary power source.

Except for a special transformer, welders using the system are conventional in design. Existing machines may readily be adapted to use the system. Application of low frequency secondary power to the weld in the form of a pulsating current of increasing amplitude is effective in building up large values of heat and greatly extends the range of work which can be welded with any given machine. Illustration shows projection welder with a single cabinet



which contains the power converting unit, synchronous timing and sequencing controls.

Check No. 4 on Reply Card for more Details

Fork Truck Attachment

Metal drum handling is facilitated with the twin pusher attachment for use on standard Skylift electric fork trucks of all capacities, made by Automatic Transportation Co., 149 West 87th St., Chicago, Ill. With high pressure hydraulic operation and individual pushbutton controls, the rams can be used independently or simultaneously.

Completely self-contained, the unit includes its own motors and pumps. It can be detached quickly by the removal of only four bolts and replaced by standard forks. An overhead guard is provided to protect the operator.

Check No. 5 on Reply Card for more Details

Abrasive Tools

Line of 360 cycle portable abrasive tools, including small wheel grinders, cone sanders, 4, 6 and 8-inch straight grinders, 6-inch cup grinders, 7 and 9-inch sanders and 9-inch polishers, is announced by Rotor Tool Co., Cleveland, O. Motor is of squirrel

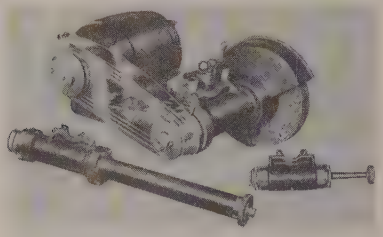
cage induction type in which the speed is governed by frequency of the power supply which is 360 cycle current (220 volts, 3 phase). Power is supplied by an inductor frequency converter or motor generator.

Motor spindle speed is 21,600 revolutions per minute. For small wheel work, mounted points or rotary files, the speed is used direct. For heavy operation, it is geared down to the correct spindle speed. There are no electrical connections between the stator and rotor. Cooling is provided by a solid web fan. Bearings are mounted in machined steel inserts cast into magnesium housings.

Check No. 6 on Reply Card for more Details

Grinders

Hisey-Wolf Machine Co., division of Smith & Mills Co., Cincinnati 25,



O., has redesigned and is producing 1 and 2 horsepower precision internal and external grinders. Principal change is in the motor mounting, an adapter base for the motor now being supplied with flat key and keyway between adapter and main frame casting. A minimum of time is required to adjust the V-belts when clamping from external to internal spindle head or vice versa.

Perfect belt alignment is assured by the keyway. Cylindrical, internal and surface grinding operations can be performed when these machines are mounted in lathes, boring mills, planers, milling machines, etc. The two internal grinding heads are interchangeable with the external grinding head that is shown on the machine.

Check No. 7 on Reply Card for more Details

Electric Tractor

Lift Trucks Inc., Cincinnati 14, O., is offering its model KTL Hydroelectric electric tractor for use with semilive skids. The tractor and one operator are said to replace two or more men formerly needed to move loaded skids. Excellent maneuverability is provided with a wheelbase of only 40 inches. A power hydraulic jack at the rear of the tractor lifts the front end of the skid.

Tractor has two speeds forward and reverse and dynamic brakes. Al are fingertip controlled. Other fea tures include two front drivin wheels and a differential transmis sion sealed in lubricant. Capacity i

based on pulling a semilive ski loaded with 4000 pounds.

Check No. 8 on Reply Card for more Detail

Portable Shop Cranes

Motors, engines, castings, etc., ma be put in and out of machines, lathes punch presses and other machine with the portable shop cranes, three o which are being announced by Gran Specialties Co., 3135 West Grand Ave. Chicago 22, Ill. Models 1-C and 2-C have a capacity of 3000 pounds an

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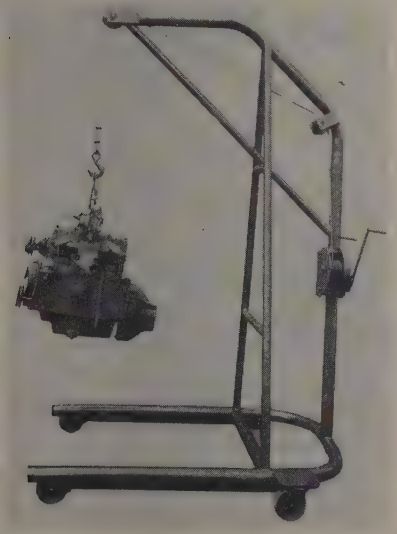
Tri-Boro Steel Supply Co., Inc.

lifts of 7 feet and 8 feet 6 inches respectively. Model 7-C has a maximum lift of 10 feet 8 inches and has a guaranteed capacity of 4000 pounds, although it has lifted 7000 pounds.

Cranes are equipped to be easily rolled throughout the shop. The safety winch is turned clockwise to lift the load. Seven turns lift the load 1 foot. Whenever the crank motion is stopped, the load is held in that



position. Boom on the model 7-C crane can be extended to 79 inches. When folded down it is only 48 inches from the ground. It may be supplied with hydraulic operation and with extra reach and lift capacities.

Check No. 9 on Reply Card for more Details

Power Belt Conveyor

Available in belt widths of 8, 12, 14 and 20 inches, the Power-Veyor power belt conveyor, built by Rapids-Standard Co. Inc., 342 Rapistan Bldg., Grand Rapids 2, Mich., is built for permanent or semipermanent instal-

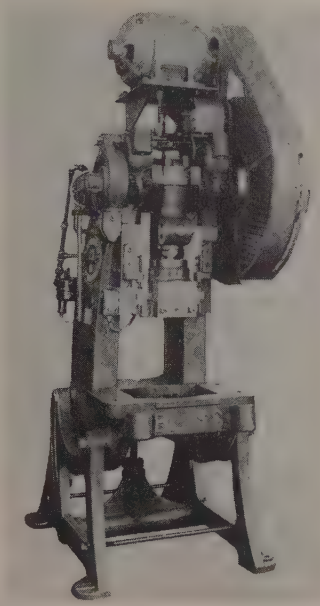
lation. It is suited to fill the need for a horizontal belt conveyor in lengths up to 150 feet. Unit is comprised of the following component parts: Drive section with motor and drive pulley; sections of Rapid-Roller gravity conveyor; take-up section.

An idler roller to permit return of the belt is built into supports provided for intermediate gravity conveyor sections. Conveyor sections available for intermediate sections are of two types: With rollers projecting above channel frame; with rollers below channel frame. Rollers are 2 inches in diameter. Canvas duck, rubber impregated and vulcanized friction top and friction backed belt is used. Motors are specified according to length and width of unit ordered and load to be carried.

Check No. 10 on Reply Card for more Details

Inclinable Presses

Standard flywheel type inclinable presses, as well as smaller geared sizes, made by E. W. Bliss Co., 450 Amsterdam Ave., Detroit 2, Mich., are now equipped with the Bliss



pneumatic friction clutch and brake. For certain applications the clutch has several advantages. Safety is increased as the press can be stopped at any point in the stroke.

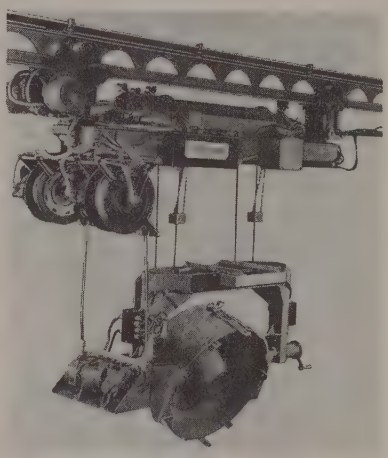
Friction clutch is also valuable where an inching action is desirable to facilitate setting up certain types of dies. Press may also be reversed, allowing the punch to be backed away from the die without completing the stroke, when necessary.

Check No. 11 on Reply Card for more Details

Chip Handling Carrier

Baskets of various metal chips may be transported from oil extractor to any one of a number of storage bunkers with the automatic overhead carrier developed by Cleveland Tramrail Division of Cleveland Crane & Engineering Co., Wickliffe, O. The carrier delivers, empties by turning the basket over, and returns automatically. All operations are taken care of by one man at the extractor.

Carrier handles baskets of 15 cubic feet and 1000 pound capacity. They are clamped into position by a hand crank and turn over automatically at a speed of 12½ revolutions per minute at destination. A dial selec-

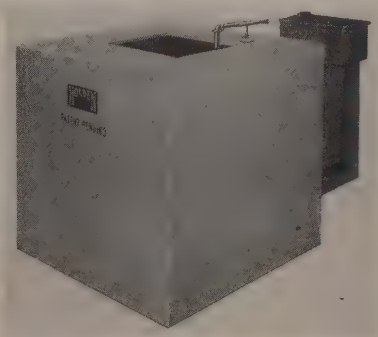


tor above the crank enables the preselection of any station to which it is desired to dispatch a load. Up to 400 stations may be served by the selector. Unit has three motors which serve hoist, carrier travel and basket roll over. Speed is 200 feet per minute.

Check No. 12 on Reply Card for more Details

Electrode Furnace

The liquid electrode furnace No. 601, announced by A. F. Holden Co., New Haven 8, Conn., is made in any size, length or depth from 3 inches



to 12 feet deep and is of the type that eliminates salt bath breakdown, no rectification being necessary. Economy of the furnace lies in the fact that the power conductors that transfer current to the pools which hold the liquid alloy are entirely surrounded by refractory. Surface radi-

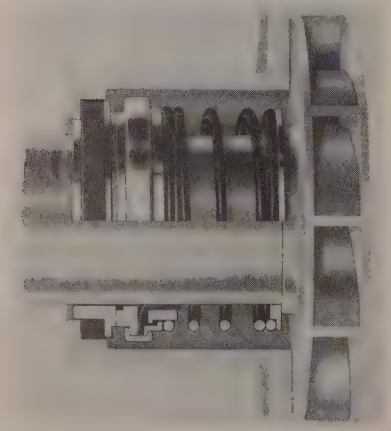
ation area is reduced by 25 per cent.

Inclusion of a starting coil in the design permits the furnace to be started on an electric resistance circuit. Therefore it may be shut down for power failures by installing a resistance coil. Furnace has two or more pools separated by a cremaic barrier and containing a metal, molten at operating temperatures. Temperature is from 200 to 600° F below the operating temperature of the salt bath. Its power input controller for idling or weekend shutdowns can be set from 0 to 100 per cent.

Check No. 13 on Reply Card for more Details

Rotating Shaft Seal

Suitable for such applications as water, oil and gasoline pumps, refrigeration compressors, speed reducers, etc., is the Roto-Flex rotating shaft seal, announced by Gits Brothers Mfg. Co., 1846 Kilbourn Ave., Chicago 23, Ill. It is claimed to prevent leakage of liquids or gasses along a rotating shaft when under pressure or vacuum.



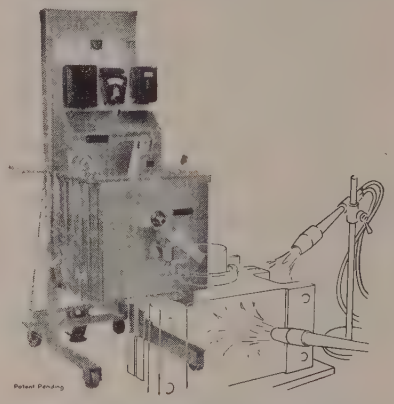
Seal has three main parts. The rotating member, the seal nose, is an integral unit and cannot come apart. It is held by a compression spring against a fixed surface, or stationary seal. Operating conditions determine the amount of spring pressure necessary to make a positive seal and determine materials used for the components. Seals are offered in single and double units.

Check No. 14 on Reply Card for more Details

Babbitting Furnace

Bearings may be lined without the use of hand ladles with the Babomatic babbitting furnace developed by United American Metals Corp., 200 Diamond St., Brooklyn 22, N. Y. Bearing is set on the work platform below the furnace and by means of a crank the furnace is raised to the point where a pouring trough is in position to guide the flow of molten babbitt into the bearing. Splashing which causes blowholes is eliminated.

Furnace is insulated and temperature-controlled. When ready to pour, a bottom pour valve located



inside the furnace pot is opened and the molten metal passes down the trough into the shell at a controlled flow. Babbitter is equipped with casters and is held in position with a floor lock. It is designed for gas or electric heating. A folding shelf on the side holds accessories.

Check No. 15 on Reply Card for more Details

* * *

HAND TRUCK: A precision balanced truck with all-steel welded unit frame of tubular airplane construction is manufactured by Lewis-Shepard Products Inc., Watertown 72, Mass. Recommended for users who handle cases, boxes, carton, barrels, drums and similar goods.

Check No. 16 on Reply Card for more Details

SELENIUM STACK: A heavy duty selenium stack, in three phase half wave circuit, that will deliver 1500 amperes and 9 volts continuous load, is made by International Rectifier Corp., Los Angeles 43, Calif. The stack consists of 34 selenium elements and each one is individually moisture-proofed to provide protection against corrosive atmosphere.

Check No. 17 on Reply Card for more Details

DISTRIBUTION TRANSFORMERS: The addition of 25 and 37-1/2 kilovolt-ampere transformers to its line of CSPB units for banked-secondary operation is announced by Westinghouse Electric Corp., Pittsburgh, Pa.

Check No. 18 on Reply Card for more Details

END MILLS: Raymac Mfg. Co. Inc., Detroit 1, Mich., offers both single and double end mills made of solid carbide. They are available in sizes from 1/16-inch cutter diameter to 9/16-inch. Shank tolerances are from plus 0.000 to minus 0.001; cutter head from plus 0.001 to minus 0.001.

Check No. 19 on Reply Card for more Details

DIE LIFTERS: A line of self-aligning die lifters for safe and convenient handling of dies, machine tools and other heavy objects is offered by Modern Collet & Machine Co., Ecorse 18, Mich. They are available in four sizes with maximum lifting capacities of 16, 28, 40 and 100 tons each.

Check No. 20 on Reply Card for more Details

HAND TACHOMETER: Equipoise Controls Inc., Mt. Vernon, N. Y., is distributing a hand tachometer developed by Smiths Industrial Instruments Ltd. Transmission of driving spindle rotation to indicating pointer is effected in first stage mechanically and in second stage magnetically. Instrument is made in three models and each has three ranges.

Check No. 21 on Reply Card for more Details

STACKING BOX: A box of all-steel welded construction with a four-way entrance with a corrugated bottom is offered by Palmer-Shile Co., Detroit, Mich. It is supported by four angle legs with shoes for floor protection.

Check No. 22 on Reply Card for more Details

PIPE BENDER: A lightweight, portable hydraulic pipe bender is made by Electric Cord Co., New York 7, N. Y. It features a removable hydraulic jack and open jaw construction. It is available complete with 3/4, 1, 1-1/4, 2 and 2-1/2 inch dies.

Check No. 23 on Reply Card for more Details

STRAIGHT EDGES: Six foot long granite straight edges are offered by Rahn Granite Surface Plate Co., Dayton, O. They are made to a tolerance of 0.0005-inch and will not warp because of temperature changes or shock.

Check No. 24 on Reply Card for more Details

FOR MORE INFORMATION
on the new products and equipment in this section, fill in a card. It will receive prompt attention.

Market Summary

PROSPECTS— The year is ending with an increasing note of caution evident in the steel markets. While the steel shortage gives every promise of continuing for months into the future, buyers today are appraising their inventory position more closely than at any time since termination of the war. Demand appears just as pressing as ever, but the mixed situation in general business over the past several weeks has alerted producers and consumers for any sudden change which may develop in the steel situation.

SOFT SPOTS— Up to the present, few real soft spots have appeared in the metalworking field. These have been principally in light durable lines, including radios, heating and ventilating equipment, vacuum cleaners, washers, ironers, stoves and certain other household appliances. Some cutbacks in these lines are thought due to seasonal factors. However, supply has caught up with demand in certain items and stocks have been accumulating with growing consumer price resistance. Whether the slackening to date will snowball over coming weeks is a subject for much speculation.

CHECKUP— In view of the noticeable uncertainty in business circles it is not surprising that steel sellers are taking the precaution to check up on the position of their customers. Sales offices are being asked to check on developments at metalworking plants, not only with respect to current operations but to end-use demand as well, with a view to determining to what extent, if any, the slight easing in pressure may be due to year-end influences. One conclusion drawn so far is that metalworking plants, being more inventory conscious, may be out of operation over the holidays for a longer period than in recent years to permit a thorough check on stocks.

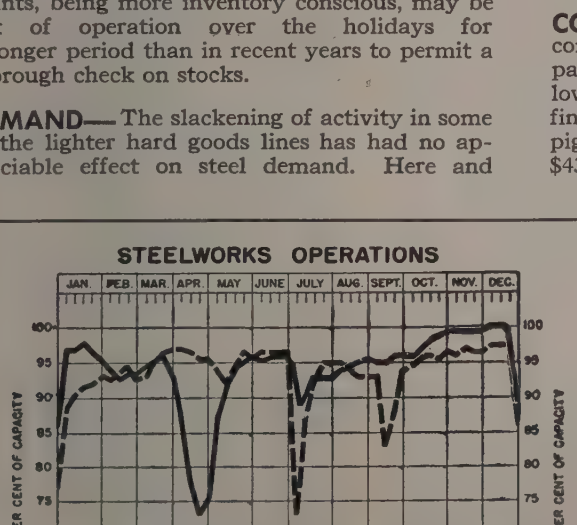
DEMAND— The slackening of activity in some of the lighter hard goods lines has had no appreciable effect on steel demand. Here and there some order cancellations have been reported but these have been relatively minor. A stovemaker canceled some sheet tonnage with an eastern mill but this is one of the few instances reported to date in any of the major products. At the same time, a variety of fabricators, including automotive shops, continue to press for all the tonnage they can get. Even some stovemakers claim they could use more enameling stock to advantage if they could get their hands on it. Pressure for conversion ingots continues strong, and it is in this area that the turn to a buyers' market is expected to show up first. Some slight easing for gray market steel has been noted.

PRODUCTION— Reflecting holiday influences, steel ingot production last week dropped 11½ points to 88 per cent of capacity as many furnaces went down on Saturday in observance of Christmas.

PRICES— While the outlook with respect to steel product prices is clouded by the uncertainties in general business, no broad revision in steelmakers' present schedules seems in early prospect. Pending the outcome of wage negotiations some months from now it is unlikely any major changes in prices will be made. Various adjustments in extras can be looked for from time to time, however. Last week several producers announced a revision in extras on hot and cold-rolled sheets. Also, two leading producers made reductions in extras on several of their stainless steel products. A significant price development of the week was the further showing of easiness in scrap, especially on foundry grades.

COMPOSITES— STEEL's arithmetical price composites held unchanged last week and compared with those for the like 1947 week as follows: Finished steel, $95.50 and $76.32; semi-finished steel, $75.75 and $57.20; steelmaking pig iron, $46.29 and $36.31; steelmaking scrap, $43.25 and $39.92.

STEELWORKS OPERATIONS



DISTRICT STEEL RATES

Percentage of Ingot Capacity engaged in Leading Districts

	Week Ended Dec. 25	Change	Same Week 1947	Same Week 1946
Pittsburgh	81.5	—14.5	87	78.5
Chicago	85	—13	79.5	70
Eastern Pa.	83.5	—13.5	85	76
Youngstown	85	—20	80	70
Wheeling	89.5	— 5	86	77.5
Cleveland	94	— 2.5	81	77.5
Buffalo	96.5	— 7.5	87.5	90.5
Birmingham	98	— 2	102	84
New England	86	— 3	75	85
Cincinnati	90	— 9	78	75
St. Louis	79.5	—10	89	68
Detroit	98	— 2	92	88
Estimated national rate	88	—11.5	86	77

Based on weekly steelmaking capacity of 1,802,476 net tons for 1948; 1,749,928 tons for 1947; 1,762,381 tons for 1946.

COMPOSITE MARKET AVERAGES

Arithmetical Price Composites*

	Dec. 25	Dec. 18	Month Ago Nov. 1948	Year Ago Dec. 1947	5 Years Ago Dec. 1943
Finished Steel	$95.50	$95.50	$95.16	$76.15	$56.73
Semifinished Steel	75.75	75.75	75.75	57.20	36.00
Steelmaking Pig Iron	46.29	46.29	46.29	36.31	23.00
Steelmaking Scrap	43.25	43.25	43.25	40.13	19.17

FINISHED STEEL WEIGHTED COMPOSITE†

Nov. 1948	4.14340c
Oct. 1948	4.16150c
Sept. 1948	4.13446c
Nov. 1947	3.47537c
Nov. 1943	2.39672c

*STRAIGHT ARITHMETICAL COMPOSITES: Computed from average industry-wide mill prices on Finished Carbon Steel (hot-rolled sheets, cold-rolled sheets, cold-rolled strip, hot-rolled bars, plates, structural shapes, basic wire, standard nails, tin plate, standard and line pipe), on Semifinished Carbon Steel (re-rolling billets and slabs, sheet bars, skelp, and wire rods), on Basic Pig Iron (at eight leading producing points), and on Steelworks Scrap (No. 1 melting grade at Pittsburgh, Chicago and eastern Pennsylvania). Steel arithmetical composites, dollars per net ton; pig iron and scrap, gross ton.

†FINISHED STEEL WEIGHTED COMPOSITE: Computed in cents per pound, mill prices, weighted by actual monthly shipments of following products, representing about 82 per cent of steel shipments in the latest month for which statistics are available, as reported by American Iron & Steel Institute: Structural shapes; plates, standard rails; hot and cold-finished carbon bars; black butt weld pipe and tubes; black lap weld pipe and tubes; black electric weld pipe and tubes; black seamless pipe and tubes; drawn wire; nails and staples; tin and terne plate; hot-rolled sheets; cold-rolled sheets; galvanized sheets; hot-rolled strip; and cold-rolled strip. November, 1948, figure is preliminary.

COMPARISON OF PRICES

Representative market figures for current week; average for last month, three months and one year ago. Finished material (except tin plate) and wire rods, cents per lb; semifinished (except wire rods) and coke, dollars per net ton, others dollars per gross ton. Delivered prices represent lowest from mills.

Finished Materials

	Dec. 25, 1948	Nov. 1948	Sept. 1948	Dec. 1947
Steel bars, Pittsburgh mills	3.45c	3.45c	3.45c	2.90c
Steel bars, del. Philadelphia	3.79	3.79	3.79	3.318
Steel bars, Chicago mills	3.35	3.35	3.35	2.90
Shapes, Pittsburgh mills	3.275	3.275	3.275	2.80
Shapes, Chicago mills	3.25	3.25	3.25	2.80
Shapes, del. Philadelphia	3.48	3.48	3.48	2.954
Plates, Pittsburgh mills	3.50	3.50	3.50	2.95
Plates, Chicago mills	3.40	3.40	3.40	2.95
Plates, del. Philadelphia	3.71	3.71	3.71	3.17
Sheets, hot-rolled, Pittsburgh mills	3.275	3.275	3.275	2.80
Sheets, cold-rolled, Pittsburgh	4.00	4.00	4.00	3.55
Sheets, No. 10 galv., Pittsburgh	4.40	4.40	4.40	3.90
Sheets, hot-rolled, Gary mills	3.25	3.25	3.25	2.80
Sheets, cold-rolled, Gary mills	4.00	4.00	4.00	3.55*
Sheets, No. 10 galv., Gary mills	4.40	4.40	4.40	3.90
Strip, hot-rolled, Pittsburgh mills	3.275	3.275	3.275	2.80
Strip, cold-rolled, Pittsburgh mills	4.375	4.375	4.375	3.55
Bright basic, wire, Pittsburgh	4.325	4.325	4.325	3.675
Wire nails, Pittsburgh mills	5.775	5.775	5.775	4.625
Tin plate, per base box, Pitts. dist.	$6.70	$6.80	$6.80	$5.75

Semifinished

Sheet bars, mill	$67.00*	$67.00*	$67.00*	$53.57
Slabs, Chicago	52.00	52.00	52.00	40.18
Rerolling billets, Pittsburgh	59.00	59.00	59.00	40.18
Wire rod 7/32 to ½-inch, Pitts. dist.	3.775c	3.775c	3.775c	3.05c

* Nominal.

Pig Iron

	Dec. 25, 1948	Nov. 1948	Sept. 1948	Dec. 1947
Bessemer, del. Pittsburgh (N.&S. sides)	$48.08	$48.08	$48.08	$37.913
Basic, Valley	46.00	46.00	48.00	36.00
Basic, eastern del. Philadelphia	50.17	50.17	47.77	38.84
No. 2 fdry., del. Pgh. (N.&S. sides)	47.58	47.58	47.58	37.413
No. 2 fdry., del. Philadelphia	50.67	50.67	48.27	39.34
No. 2 foundry, Chicago	46.25	46.25	43.25	36.00
No. 2 foundry, Valley	46.50	46.50	43.50	36.50
Southern No. 2 Birmingham	43.38	43.38	43.38	34.88
Southern No. 2 del. Cincinnati	49.09	49.09	49.09	37.74
Malleable, Valley	46.50	46.50	43.50	36.50
Malleable, Chicago	46.50	46.50	43.50	36.50
Charcoal, low phos., fob Lyles, Tenn.	66.00	66.00	62.00	50.00
Ferromanganese, f.o.b. Etna, Pa.	163.00	163.00	148.00*	151.00*

* F.o.b. cars Pittsburgh.

Scrap

Heavy melt. steel, No. 1, Pittsburgh	$42.75	$42.75	$42.75	$40.00
Heavy melt. steel, No. 2, E. Pa.	41.50	41.50	41.50	41.625
Heavy melt. steel, No. 1, Chicago	41.75	41.75	41.75	38.75
Heavy melt. steel, No. 1, Valley	42.75	42.75	42.75	39.75
Heavy melt. steel, No. 1, Cleveland	42.25	42.25	42.25	39.25
Heavy melt. steel, No. 1, Buffalo	48.50	48.50	48.15	42.50
Rails for rerolling, Chicago	69.50	69.50	64.50	58.625
No. 1 cast, Chicago	70.50	70.50	71.10	55.876

Coke

Connellsville, beehive furnace	$14.50	$14.50	$14.50	$12.25
Connellsville, beehive foundry	17.00	17.00	17.00	14.50
Chicago, oven foundry, ovens	20.40	20.40	20.40	17.875

FINISHED AND SEMIFINISHED IRON, STEEL PRODUCTS

Finished steel quoted in cents per pound and semifinished in dollars per net ton, except as otherwise noted. Prices apply on an individual producer basis to products within the range of sizes, grades, finishes and specifications produced at its plants.

Semifinished Steel

Carbon Steel Ingots: Rerolling quality, standard analysis, open market, $100-$105 per gross ton. Forging quality, $50 per net ton, mill.

Alloy Steel Ingots: $51 per net ton, mill.

Rerolling Billets, Blooms, Slabs: $52 per net ton, mill, except $62, Conshohocken, Pa.; $66, Monessen, Pa.; sales by smaller interests on negotiated basis at $85 per gross ton, or higher.

Forging Quality Billets, Blooms, Slabs: $61 per net ton, mill, except: $68, Conshohocken, Pa., mill.

Alloy Billets, Slabs, Blooms: Rerolling quality, $63 per net ton, mill except: $70, Conshohocken, Pa.

Sheet Bars: $67 nom., per net ton, mill; sales in open market $110-$115 per gross ton.

Skelp: 3.25c per lb. mill.

Tube Rounds: $76 per net ton, mill; some sellers quoting up to $120 per gross ton.

Wire Rods: Basic and acid open-hearth, 7/32 & 5/16-inch, inclusive, 3.40c per lb, mill, except: 3.65c, Struthers, O.; 3.70c, Worcester, Mass.; 4.05c, Pittsburg, Calif.; 4.10c, Portsmouth, O., Los Angeles; 4.15c Monessen, Pa. One producer quotes 3.90c, Chicago base. Basic open-hearth and bessemer, not resulphurized, 7/32 to 47/64-inch, inclusive, 3.50c, mill.

Bars

Hot-Rolled Carbon Bars (O.H. only) and Bar-Size Shapes under 3-in. (Base 20 tons one size): 3.35c, mill, except: 3.55c, Ecorse, Mich., Pittsburgh, Monessen, Aliquippa, Pa.; 4.05c, Pittsburg, Torrance, Calif.; 4.10c, S. San Francisco, Los Angeles, Niles, Calif., Portland, Oreg., Atlanta, Seattle; 4.20c, Kansas City, Mo.; 4.25c, Minnequa, Colo.; 5.30c, Fontana, Calif.

Rail Steel Bars: (Base 10 tons): 3.35c, Moline, Ill., 5.10c, Williamsport, Pa.; another interest quotes 5.35c, mill.

Hot-Rolled Alloy Bars: 3.75c, mill, except: 4.05c, Ecorse, Mich.; 4.80c, Los Angeles; 5.50c, Fontana, Calif.

Hot-Rolled Alloy Bar Shapes: 4.00c, mill.

Cold-Finished Carbon Bars (Base 40,000 lb and over): 4.00c, mill, except: 3.95c, Pittsburgh, Cumberland, Md.; 4.20c, Indianapolis; 4.25c, Monessen, Pa.; 4.30c, Ecorse, Mich.; 4.35c, St. Louis; 4.36c, Plymouth, Mich.; 4.40c, Newark, N. J., Hartford, Putnam, Conn., Mansfield, Readville, Mass.; 4.45c, Camden, N. J.; 5.30c, Los Angeles.

Cold-Finished Alloy Bars: 4.65c, mill, except: 4.75c, Monessen, Pa.; 4.85c, Indianapolis; 4.95c, Worcester, Mansfield, Mass., Hartford.

High-Strength, Low-Alloy Bars: 5.10c, mill, except: 5.40c, Ecorse, Mich.

Reinforcing Bars (New Billet): 3.35c, mill, except: 3.55c, Monessen, Pa.; 4.05c, Pittsburg, Torrance, Calif.; 4.10c, Atlanta, Seattle, S. San Francisco, Los Angeles; 4.25c, Minnequa, Colo. Fabricated: To consumers: 4.25c, mill, except: 5.00c, Seattle.

Reinforcing Bars (Rail Steel): 4.65c, Williamsport, Pa., mill; another interest quotes 5.35c, mill.

Wrought Iron Bars: Single Refined: 8.60c, (hand puddled), McKees Rocks, Pa.; 9.50c, Economy, Pa. Double Refined: 11.25c (hand puddled), McKees Rocks, Pa., 11.00c, Economy, Pa. Staybolt: 12.75c, (hand puddled), McKees Rocks, Pa.; 11.30c, Economy, Pa.

Sheets

Hot-Rolled Sheets (18 gage and heavier): 3.25c, mill, except: 3.25-3.30c, Cleveland; 3.30c, Pittsburgh; 3.45c, Ecorse, Mich.; 3.95c, Pittsburg, Torrance, Calif.; 5.00c, Conshohocken, Pa.; 5.65c, Fontana, Calif.; 6.25c, Kansas City, Mo.

Hot-Rolled Sheets (19 gage and lighter, annealed): 4.15c, mill, except: 4.40c, Alabama City, Ala.; 4.65c, Niles, O., 5.05c, Torrance, Calif., Kokomo, Ind.

Cold-Rolled Sheets: 4.00c, mill, except: 4.20c, Ecorse, Mich.; 4.70c, Granite City, Ill.; 4.95c, Pittsburg, Calif.

Galvanized Sheets, No. 10: (Based on 5 cent zinc) 4.40c, mill, except: 5.00c, Niles, O.; 5.15c, Pittsburg, Torrance, Calif.; 5.30c, Kokomo, Ind.

Galvannealed Sheets: 4.95c, mill, except: 5.05c, Indiana Harbor, Ind.; 5.55c, Niles, O.; 5.70c, Kokomo, Ind.

Culvert sheets, No. 16 flat Copper Steel (based on 5-cent zinc): 5.00c, mill, except: 5.40c, Granite City, Ill.; 5.45c, Kokomo, Ind.; 5.75c, Pittsburg, Torrance, Calif.

Long Ternes, No. 10 (Commercial quality): 4.50c, mill.

Enameling Sheets, No. 12: 4.40c, mill, except: 4.60c, Granite City, Ill.; 4.70c, Ecorse, Mich.; 6.00c, Niles, O.

Silicon Sheets, No. 24: Field: 5.15c, mill. Armature: 5.45c, mill, except: 5.95c, Warren, O.; 6.05c, Niles, O.

Electrical: Hot-rolled, 5.95c, mill, except: 6.05c, Kokomo, Ind.; 6.15c, Granite City, Ill. 6.45c, Warren, O.; 6.55c, Niles, O.

Motor: 6.70c, mill except: 6.90c, Granite City, Ill.; 7.20c, Warren, O.; 7.95c, Follansbee, W. Va., Toronto, O.; 9.20c, Brackenridge, Pa.

Dynamo: 7.50c, mill, except: 8.65c, Follansbee, W. Va., Toronto, O.; 7.70c, Granite City, Ill.; 10.00c, Brackenridge, Pa.

Transformer 72, 8.05c, mill, except: 9.15c, Follansbee, W. Va., Torronto, O.; 11.80c, Brackenridge, Pa. **65,** 8.60c, mill, except: 9.85c, Follansbee, W. Va., Toronto, O.; 12.35c, Brackenridge, Pa.; **58,** 9.30c, mill, except: 10.55c, Follansbee, W. Va., Toronto, O.; 13.05c, Brackenridge, Pa.; **52,** 10.10c, mill, except: 11.35c, Follansbee, W. Va., Toronto, O.

High-Strength Low-Alloy Sheets: Hot-rolled, 4.95c, mill, except: 5.25c, Ecorse, Mich., and Conshohocken, Pa., mills.

Galvanized (No. 10), 6.75c, mill.

Cold-rolled, 6.05c, mill, except: 6.35c, Ecorse, Mich.

Strip

Hot-Rolled Strip: 3.25c mill, except: 3.30c, Cleveland, Pittsburgh, Riverdale, Ill.; 3.25-3.35c,* Sharon, Pa.; 3.45c, Ecorse, Mich., Atlanta; 3.60c, Detroit; 3.70c, West Leechburg, Pa.; 4.00c, Pittsburg, Torrance, Calif.; 4.25c, Seattle, S. San Francisco, Los Angeles; 4.20c, Kansas City, Mo.; 4.30c, Minnequa, Colo.; 5.90c, Fontana, Calif. One company quotes 4.90c, Pittsburgh base.

* Wider than 6-in. and 6-in. and narrower, respectively.

Cold-Rolled Strip (0.25 carbon and less): 4.00c, mill, except 4.00-4.25c, Warren, O.; 4.00-4.50c, Youngstown; 4.20c, Ecorse, Mich.; 4.25c, Riverdale, Ill.; 4.40-4.50c, Detroit; 4.50c, New Haven, Conn., West Leechburg, New Castle, Pa., Boston; 4.75c, Dover, O., New Kensington, Pa.; 4.50-5.00c, Trenton, N. J.; 4.80-5.05c, Wallingford, Conn.; 5.75c, Los Angeles; 7.10c, Fontana, Calif. One company quotes 4.55c, Cleveland or Pittsburgh base, and 4.75c, Worcester, Mass., base; another, 5.00c, Pittsburgh base.

Cold-Finished Spring Steel: 0.26-0.40 C, 4.00c, mill, except: 4.25c, Dover, O., Chicago; 4.30c, Worcester, Mass.; 4.50c, New Castle, Pa., Boston, Youngstown; 4.75c, Wallingford, Conn. Over 0.40 to 0.60 C, 5.50c, mill, except: 5.65c, Chicago; 5.75c, Dover, O.; 5.80c, Worcester, Mass., Wallingford, Conn., Trenton, N. J.; 5.95c, Boston; 6.00c, New Castle, Pa. Over 0.60 to 0.80 C, 6.10c, mill, except: 6.25c, Chicago; 6.35c, Dover, O.; 6.40c, Worcester, Mass., Wallingford, Bristol, Conn., Trenton, N. J.; 6.60c, New Castle, Pa. Over 0.80 to 1.05 C, 8.05c, mill, except: 7.85c, Dover, O.; 8.20c, Chicago; 8.35c, Worcester, Mass., Bristol, Conn., Trenton, N. J. Over 1.05 to 1.35 C, 10.35c, mill, except: 10.15c, Dover, O.; 10.30c, Wallingford, Conn.; 10.50c, Chicago; 10.65c, Worcester, Mass., Trenton, N. J.

Cold-Rolled Alloy Strip: 9.50c, mill, except: 9.80c, Worcester, Mass.

High-Strength, Low-Alloy Strip: Hot-rolled, 4.95c, mill, except: 5.25c, Ecorse, Mich., mill. Cold-rolled, 6.05c, mill, except: 6.35c, Ecorse, Mich., mill.

Tin, Terne Plate

Tin Plate: American Coke, per base box of 100 lb, 1.25 lb coating $6.60-$6.80; 1.50 lb coating $6.80-$7.00. Pittsburg, Calif., mill $7.35 and $7.55, respectively, for 1.25 and 1.50 lb coatings.

Electrolytic Tin Plate: Per base box of 100 lb, 0.25 lb tin, $5.80-$6.00; 0.50 lb tin, $6.00-$6.20; 0.75 lb tin, $6.20-$6.40.

Can Making Black Plate: Per base box of 100 lb, 55 to 70 lb basis weight, $5.20-$5.30; 75 to 95 lb basis weight $5.10-$5.20; 100 to 128 lb basis weight $5.20-$5.30. $5.95, $5.85, $5.95, respectively, Pittsburg, Calif.

Holloware Enameling Black Plate: 29-gage, 4.75c per pound, except: 4.85c, Sparrows Point, Md.; 4.95c, Granite City, Ill.

Manufacturing Ternes (Special Coated): Per base box of 100 lb, $5.90, except: $6 Fairfield, Ala., Sparrows Point, Md.

Roofing Ternes: Per package 112 sheets; 20 x 28 in., coating I.C, 8-lb, $15.50.

Plates

Carbon Steel Plates: 3.40c, mill, except: 3.40-3.60c, Cleveland; 3.45c, Sparrows Point, Md., Johnstown, Pa., Lackawanna, N. Y.; 3.60c, Pittsburgh; 3.65c, Ecorse, Mich.; 3.75c., Coatesville, Pa.; 3.95c, Claymont, Del., Conshohocken, Pa.; 4.30c, Seattle, Minnequa, Colo.; 4.56c, Houston, Tex.; 5.80c, Fontana, Calif.; 6.50c, Harrisburg, Pa.; 6.25c, Kansas City, Mo.

Floor Plates: 4.55c, mill.

Open-Hearth Alloy Plates: 4.40c, mill, except: 5.10c, Coatsville, Pa., mill.

High-Strength, Low-Alloy Plates: 5.20c mill, except: 5.10c, Coatesville, Pa.; 5.30c, Conshohocken, Pa., Sparrows Point, Md., Johnstown, Pa.; 5.65c, Ecorse, Mich., Sharon, Pa.

Shapes

Structural Shapes: 3.25c, mill, except: 3.30c, Bethlehem, Pa., Lackawanna, N. Y., Johnstown, Aliquippa, Pa.; 3.85c, Torrance, Calif.; 4.15c, Minnequa, Colo.; 4.30c, Seattle, S. San Francisco, Los Angeles; 5.75c, Fontana, Calif.

Alloy Structural Shapes: 4.05c, mill.

Steel Sheet Piling: 4.05c, mill.

High-Strength, Low-Alloy Shapes: 4.95c, mill. except: 5.05c, Bethlehem, Johnstown, Pa., Lackawanna, N. Y.

Wire and Wire Products

Wire to Manufacturers (carloads): Bright, Basic or Bessemer Wire, 4.15c, mill, except: 4.25c, Sparrows Point, Md., Kokomo, Ind.; 4.45c, Worcester, Mass.; 4.50c, Monessen, Pa., Minnequa, Colo.; Atlanta, Buffalo; 4.70c, Portsmouth, O.; 4.80c, Palmer, Mass.; 5.10c, Pittsburg, Calif.; 5.15c, S. San Francisco; 5.40c, Shelton, Conn. One producer quotes 4.50c, Chicago base; another, 4.50c, Crawfordsville, Ind., freight equalized with Pittsburgh and Birmingham.

Basic MB Spring Wire, 5.55c, mill, except: 5.30c, Portsmouth, O.; 5.65c, Sparrows Point, Md., Monessen, Pa.; 5.85c, Worcester, Palmer, Mass., Trenton, N. J.; 6.50c, Pittsburg, Calif.

Upholstery Spring Wire, 5.20c mill, except: 5.30c, Sparrows Point, Md., Williamsport, Pa.; 5.50c, Worcester, Mass., Trenton, N J., New Haven, Conn.; 6.15c, Pittsburg, Calif.

Wire Products to Trade (carloads): Merchant Quality Wire: Annealed (6 to 8 Gage base), 4.80c, mill. except: 4.90c, Sparrows Point, Md.; 4.95c, Monessen, Pa.; 5.10c, Worcester, Mass.; 5.15c, Minnequa, Colo., Kokomo, Ind.; 5.20c, Atlanta; 5.75c, S. San Francisco, Pittsburg, Calif. One producer quotes 5.15c, Chicago and Pittsburgh base; another, 5.20c. Crawfordsville, Ind., freight equalized with Pittsburgh and Birmingham.

Galvanized (6 to 8 Gage base), 5.25c, mill, except: 5.35c, Sparrows Point, Md.; 5.40c, Monessen, Pa.; 5.55c, Worcester, Mass.; 5.60c, Kokomo, Ind., Minnequa, Colo.; 5.65c, Atlanta; 6.20c, Pittsburg, S. San Francisco, Calif. One producer quotes 5.60c, Pittsburgh and Chicago base; another, 5.65c, Crawfordsville, Ind., freight equalized with Birmingham and Pittsburgh.

Nails and Staples: Standard, cement-coated and galvanized nails and polished and galvanized staples, Column 103, mill, except: 105, Sparrows Point, Md., Kokomo, Ind.; 109 Worcester, Mass.; 110 Minnequa, Colo., Atlanta; 117, Portsmouth, O.; 123, Pittsburg, Calif.; 124, Cleveland; 126, Monessen, Pa.; $6.75 per 100 pound keg, Conshohocken, Pa., Wheeling, W. Va. One producer quotes column 109, Chicago and Pittsburgh base; another, column 113, Crawfordsville, Ind., freight equalized with Birmingham and Pittsburgh.

Woven Fence (9 to 15½ Gage, inclusive): Column 109, mill, except: 113, Monessen, Pa., Kokomo, Ind.; 116, Minnequa, Colo.; 121 Atlanta; 132, Pittsburg, Calif. One producer quotes column 113, Pittsburgh and Chicago base; another column 114, Crawfordsville, Ind., freight equalized with Pittsburgh and Birmingham.

Barbed Wire: Column 123 mill, except: 125, Sparrows Point, Md., Kokomo, Ind.; 126, Atlanta; 128, Monessen, Pa.; 130, Minnequa, Colo.; 143, Pittsburg, Calif.; 145, S. San Francisco. One producer quotes 127, Chicago and Pittsburgh base.

Fence Posts (with clamps): Column 114, Duluth; 115, Johnstown, Pa.; 116, Moline, Ill.; 122, Minnequa, Colo.; $123.50 per net ton, Williamsport, Pa.

Bale Ties (single loop): Column 106, mill, except: 108, Sparrows Point, Md., Kokomo, Ind.; 130, Atlanta; 113 Minnequa, Colo.; 130, S. San Francisco, Pittsburg, Calif. One producer quotes column 115, Crawfordsville, Ind., freight equalized with Birmingham and Pittsburgh.

Stainless Steels

(Mill prices, cents per pound)

CHROMIUM NICKEL STEELS

Type No.	Bars, Wire Shapes	Strip, Cold-Rolled	Sheets
301	28.50-28.75	30.50-32.00	37.50-40.75
302	28.50-28.75	33.00-33.75	37.50-40.75
303	31.00-31.50	36.50-39.75	39.50-43.00
304	30.00-31.25	35.00-35.75	39.50-43.00
316	46.00-48.00	55.00-57.25	53.00-57.25
347	38.50-39.75	48.50-50.25	50.00-54.00

STRAIGHT CHROMIUM STEELS

410	22.75-23.00	26.50-27.00	32.00-33.00
416	23.25-23.50	28.25-33.50	32.50-33.50
430	23.25-23.50	27.00-27.50	34.75-35.50
446	32.50-33.00	60.00-62.25	46.50-50.00

STAINLESS-CLAD STEELS

	Plates —Cladding— 10%	Plates —Cladding— 20%	Sheets —Cladding— 10%	Sheets —Cladding— 20%
302	....	....	19.75	21.50
304	22.50	26.50	20.75	22.50
310	32.50	36.50	....	....
316	27.00	31.00	26.00	28.00
321	23.50	27.50	....	....
347	25.00	29.00	24.00	26.00
405	18.75	24.75	....	....
420	18.25	24.25	....	....
430	18.25	24.25	....	....

TOOL STEELS

Tool Steel: Cents per pound, producing plants; reg. carbon 19.00c; extra carbon 22.00c; special carbon 26.50c; oil-hardening 29.00c; high carbon-chromium 52.00c; chrome hot work, 29.00c.

W	Cr	V	Mo	Co	Base Per lb
18	4	1	...	...	90.50c
18	4	2	...	...	102.50c
18	4	3	...	...	114.50c
18	4	2	...	9	168.50c
1.5	4	1	8.5	...	65.00c
6.4	4.5	1.9	5	...	69.50c
6	4	3	6	...	88.00c

Tubular Goods

Standard Steel Pipe: Mill prices in carlots, threaded and coupled, to consumers about $200 a net ton.

In.	Butt Weld Blk.	Butt Weld Gal.	In.	Blk.	Gal.
⅛	39½–	8½–	1	46–	25–
	41½	12½		48½	27½
¼	37½–	9½–	1¼	46½–	25½–
	39½	14		49	28
⅜	34–	4½–	1½	47–	26–
	36	9		49½	28½
			2	47½–	26½–
½	40½–	18–		50	29
	43	21½	2½, 3..	48–	27–
¾	43½–	22–		50½	29½
	46	24½	3½ & 4	44½	22½

In.	Lap Weld Blk.	Lap Weld Gal.	Elec. Weld Blk.	Elec. Weld Gal.	Seamless Blk.	Seamless Gal.
2	39½	17½	38½	16½	27–	5–
					38½	17
2½ ..	42½–	20½–	41½	19½	32½–	10½–
	43½	21½			41½	20
3	42½–	20½–	41½	19½	35–,	12–
	43½	21½			41½	20
3½&4	42½–	20½–	43½	21½	38½–	16½–
	46½	24½			43½	22
5 & 6	42½–	20½–	43½	21½	38½–	16½–
	44½	22½			43½	22
7	....	....	....	....	43½	20½

Line Steel Pipe: Mill prices in carlots to consumers about $200 a net ton.

In.	Butt Weld Blk.	Butt Weld Gal.	In.	Butt Weld Blk.	Butt Weld Gal.
⅛	40½	....	1¼ ...	46–	26–
¼	38½	....		48	27
⅜	35	....	1½ ...	46½–	26½–
½	40–	18½–		48½	27½
	42	19½	2	47–	26½–
¾	43–	22½–		49	28
	45	23½	2½ & 3	47½–	27–
1	45½–	25½–		49½	28½
	47½	26½	3½ & 4	43½	....

In.	Lap Weld Blk.	Lap Weld Gal.	Elec. Weld Blk.	Elec. Weld Gal.	Seamless Blk.	Seamless Gal.
2....	38½	16½	37½	15½	26–	4–
					37½	16
2½ ..	42½	20½	40½	19½	31½–	9½–
					40½	19
3 ...	42½	20½	40½	19½	34–,	12–
					40½	19
3½-4.	41½–	20–	42½	20½	37½–	15½–
	45½	23½			42½	21
5 & 6.	41½–	20	42½	20½	37½–	15½–
	43½				42½	21
8 ...	45½	....	44½	21½–	40½–	17½–
				22	44½	22
10 ..	45	....	44	21–	41½–	18½–
				21½	44	21½
12 ..	44	....	43	20	40½–	17½–
					43	20½

Standard Wrought Iron Pipe: Mill price in carlots, threaded and coupled, to consumers about $200 a net ton.

In.	Butt Weld Bulk	Butt Weld Gal.	In.	Lap Weld Bulk	Lap Weld Gal.
⅜...	+59½	+95½	1¼..	+22	+53
½...	+20½	+52½	1½..	+15½	+45½
¾...	+10½	+41½	2....	+ 7½	+36½
1 and			2½-3½	+ 5	+32
1¼	+ 4½	+32½	4....	List	+26
1½..	— 1½	+29	4½-8	+ 2	+27½
2....	— 2	+28½	9-12.	+12	+37

Boiler Tubes: Net base c.l. prices, dollars per 100', mill; minimum wall thickness, cut lengths 4 to 24"; inclusive.

(Following prices on seamless boiler tubes raised 10% by Babcock & Wilcox Tube Co. as of Nov. 22.)

O.D. In.	B.W. Ga.	Seamless Hot Rolled	Seamless Cold Drawn	Elec. Weld Hot Rolled	Elec. Weld Cold Drawn
1	13	....	13.39	13.00	13.00
1¼	13	....	15.87	13.21	15.39
1½	13	$15.05	17.71	14.60	17.18
1¾	13	17.11	20.15	16.60	19.54
2	13	19.18	22.56	18.60	21.89
2¼	12	23.54	27.70	22.83	26.88
2½	12	25.79	30.33	25.02	29.41
2¾	12	27.33	32.14	26.51	31.18
3	12	28.68	33.76	27.82	32.74
3¼	11	33.39	39.29	32.39	38.11
3½	11	35.85	42.20	34.78	40.94
4	10	44.51	52.35	43.17	50.78

Pipe Cast Iron: Class B, 6-in. and over, $93.50 per net ton, Birmingham; $106.70, del. Chicago; 4-in. pipe, $5 higher; Class A pipe, $5 a ton over Class B.

Rails, Supplies

Rails: Standard, over 60-lb; $3.20 per 100 lb. mill, except: $3.50, Indiana Harbor, Ind., and Minnequa, Colo.

Light (billet): $3.55 per 100 lb, mill, except: $4.25, Minnequa, Colo.

Light (rail steel): $5.10 per 100 lb, Williamsport, Pa.

Railroad Supplies: Track bolts, treated: $8.50 per 100 lb, mill. Untreated: $8.25, mill.

Tie Plates: 4.05c mill, except: 4.20c, Pittsburg, Calif.; 4.50c, Seattle.

Splice Bars: 4.25c, mill.

Standard Spikes: 5.35c, mill, except: 5.25c, Pittsburgh.

Axles: 5.20c, mill.

RAW MATERIAL AND FUEL PRICES

Minimum delivered prices do not include 3 per cent federal tax.

Pig Iron

Per Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa., furnace	$48.00	$48.50	$49.00	$49.50
Newark, N. J., del.	50.39	50.89	51.39	51.89
Brooklyn, N. Y., del.	....	52.40	52.90	....
Philadelphia, del.	50.17	50.67	51.17	51.67
Birmingham, furnace	42.88	43.38	....	....
Cincinnati, del.	....	49.09	....	....
Buffalo, furnace	*47.00	*47.00	*47.50	48.00
Boston, del.	55.42	55.42	55.92	....
Rochester, del.	49.22	49.22	49.72	50.22
Syracuse, del.	50.025	50.025	50.525	41.025
§**Chicago,** district furnaces	46.00	46.00-46.50	46.50	47.00
Milwaukee, del.	47.72	47.72-48.22	48.22	48.72
Muskegon, Mich., del.	....	50.98-51.48	51.48	....
Cleveland, furnace	46.00	46.50	46.50	47.00
Akron, del.	48.17	48.67	48.67	49.17
Lone Star, Tex., furnace	....	†75.00	....	....
Duluth, furnace	....	46.50	46.50	47.00
Erie, Pa., furnace	46.00	46.50	46.50	47.00
Everett, Mass., furnace	....	49.50	50.00	....
Geneva, Utah, furnace	46.00	46.50	....	....
Seattle, Tacoma, Wash., del.	....	53.63	....	....
Portland, Oreg., del.	....	53.63	....	....
Los Angeles, San Francisco	53.13	53.63	....	....
Granite City, Ill., furnace	47.90	48.40	48.90	....
St. Louis, del.	48.65	49.15	49.65	....
Ironton, Utah, furnace	....	46.50	....	....
‡**Neville Island, Pa.,** furnace	46.00	46.50	46.50	47.00
Pittsburgh, del., N.&S. Sides	47.08	47.58	47.58	48.08
Pittsburgh (Carnegie), furnaces	46.00	....	....	47.00
Sharpsville, Pa., furnace	46.00	46.50	46.50	47.00
Steelton, Pa., furnace	48.00	48.50	49.00	49.50
Struthers, O., furnace	42.50	....	....	....
Swedeland, Pa., furnace	50.00	50.50	51.00	....
Toledo, O., furnace	46.00	46.50	46.50	47.00
Cincinnati, del.	50.55	51.05	....	....
Youngstown, O., furnace	46.00	46.50	46.50	47.00
Mansfield, O., del.	49.87	50.37	50.37	50.87

* Republic Steel Corp. quotes $1 a ton higher for basic, No. 2 foundry and malleable at Buffalo.

† Low phosphorus southern grade.

‡ To Neville Island base add: $0.86 for McKees Rocks, Pa.; $1.31 Lawrenceville, Homestead, McKeesport, Monaco; $1.73 Verona; $1.94 Brackenridge; $1.08 for Ambridge and Aliquippa.

§ Includes, in addition to Chicago, South Chicago, Ill., East Chicago, Gary and Indiana Harbor, Ind.

Blast Furnace Silvery Pig Iron

6.00-6.50 per cent Si (base) $59.50
6.51-7.00 .. 60.75 9.01- 9.50. 67.00
7.01-7.50 .. 62.00 9.51-10.00. 68.25
7.51-8.00 .. 63.25 10.01-10.50. 69.50
8.01-8.50 .. 64.50 10.51-11.00. 70.75
8.51-9.00 .. 65.75 11.01-11.50. 72.00
F.o.b. Jackson, O., per gross ton. Buffalo furnace $1.25 higher.

Bessemer Ferrosilicon

Prices same as for blast furnace silvery iron, plus $1 per gross ton.

Electric Furnace Silvery Pig Iron Si 14.01-14.50%, $84.75 furnace, Niagara Falls; $84 open-hearth and $85 foundry grade, Keokuk, Iowa. Add $1 a ton for each additional 0.5% Si to 18%; 50c for each 0.5% Mn over 1%; $1 a ton for 0.45% max. phos.

Charcoal Pig Iron

Semi-cold blast, low phosphorus. F.o.b. furnace, Lyles, Tenn. ..$66 (For higher silicon iron a differential over and above the price of base grade is charged as well as for the hard chilling iron, Nos. 5 and 6.)

Low Phosphorus

Steelton, Pa., $54; Buffalo, Troy, N. Y., $60; Philadelphia, $56.81 delivered.

Intermediate phosphorus, Central furnace, Cleveland, $51.

Differentials

Prices are subject to following differentials:

Silicon: An additional charge of 50 cents a ton for each 0.25 per cent silicon in excess of base grade (1.75% to 2.25%).

Phosphorus: A reduction of 38 cents a ton for phosphorus content of 0.70 per cent and over.

Manganese: An additional charge of 50 cents a ton for each 0.50 per cent, or portion thereof, manganese in excess of 1%.

Nickel: An additional charge for nickel content as follows: Under 0.50%, no extra; 0.50% to 0.74%, inclusive, $2 a ton; for each additional 0.25% nickel, $1 a ton.

Fluorspar

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more $37; less than 60% $34.

Metallurgical Coke

Price per Net Ton

Beehive Ovens

Connellsville, furnace	$13.50-15.50
Connellsville, foundry	16.00-18.00
New River, foundry	16.50
Wise county, foundry	15.35
Wise county, furnace	14.60

Oven Foundry Coke

Kearney, N. J., ovens	$21.50
Chicago, ovens	20.40
Chicago, del.	†21.75
Detroit, del.	23.95
Terre Haute, ovens	21.00
Milwaukee, ovens	21.15
Indianapolis, ovens	20.85
Chicago, del.	24.00
Cincinnati, del.	21.40
Detroit, del.	24.40
Ironton, O., ovens	18.25
Painesville, O., ovens	20.90
Erie, del.	22.57
Cleveland, del.	22.46
Buffalo, del.	23.25
Birmingham, ovens	17.70
Philadelphia, ovens	20.55
Swedeland, Pa., ovens	20.50
Portsmouth, O., ovens	19.25
Detroit, ovens	20.65
Detroit, del.	*21.65
Flint, del.	22.85
Pontiac, del.	21.91
Saginaw, del.	23.15

Includes representative switching charge of: *, $1; †, $1.35.

Coal Chemicals

Spot, cents per gallon, ovens

(Price effective as of Aug. 5)

Pure benzol	20.00
Toluol, one degree	20.50-26.50
Toluol, two degrees	23.00-26.50
Industrial xylol	20.50-26.50

Per ton bulk, ovens

Sulphate of ammonia	$45.00

Per pound, ovens

(Effective as of Oct. 1)

Phenol, 40 (car lots, returnable drums)	13.50
Do., less than carlots	14.25
Do., tank cars	12.50

(Effective as of Oct. 25)

Naphthalene flakes, balls, bbl to jobbers, "household use"	13.75

Refractories

(Prices per 1000 brick, f.o.b. plant)

Fire Clay Brick

Super Duty: St. Louis, Vandalia, or Farber, Mo., Olive Hill, Ky., Clearfield, or Curwensville, Pa., $100.

High-Heat Duty: Salina, Pa., $85; Woodbridge, N. J., St. Louis, Farber, or Vandalia, Mo., West Decatur, Orviston, Clearfield, Beach Creek, or Curwensville, Pa., Olive Hill, Hitchins, Haldeman, or Ashland, Ky., Troup, or Athens, Tex., Stevens Pottery, Ga., Portsmouth, or Oak Hill, O., $80.

Intermediate-Heat Duty: St. Louis, or Vandalia, Mo., West Decatur, Orviston, Beach Creek, or Clearfield, Pa., Olive Hill, Hitchins, or Haldeman, Ky.; Athens, or Troup, Tex., Stevens Pottery, Ga., or Portsmouth, O., $74.

Low-Heat Duty: Oak Hill, or Portsmouth, O., Clearfield, Pa., Bessemer, Ala., $66.

Ladle Brick

Dry Press: $55, Freeport, Merill Station, Clearfield, Pa.; Chester, New Cumberland, W. Va.; Irondale, Wellsville, O.

Wire Cut: $53, Chester, New Cumberland, W. Va., Wellsville, O.

Malleable Bung Brick

St. Louis, Mo., Olive Hill, Ky., $83; Beach Creek, Pa., $73.

Silica Brick

Mt. Union, Claysburg, or Sproul, Pa., Ensley, Ala., $80; Hays, Pa. $85; Joliet or Rockdale, Ill., $89; Lehi, Utah, Los Angeles, $95.

Eastern Silica Coke Oven Shapes: Claysburg, Mt. Union, Sproul, Pa., $80.

Illinois Silica Coke Oven Shapes: Joliet or Rockdale, Ill., $81.

Basic Brick

(Base prices per net ton; f.o.b. works, Baltimore or Chester, Pa.)

Chrome brick or chemical-bonded chrome brick, $69, magnesite brick, $91; chemical-bonded magnesite, $80.

Magnesite

(Base prices pet net ton, f.o.b. works, Chewelah, Wash.)

Domestic dead-burned, ⅜" grains; Bulk, $31; single paper bags, $35.50.

Dolomite

(Base prices per net ton)

Domestic, dead-burned bulk: Billmeyer, Blue Bell, Williams, Plymouth Meeting, Pa., Millville, W. Va., Narlo, Millersville, Martin, Gibonsburg, Woodville, O., $11.85; Thornton, McCook, Ill., $11.95; Dolly Siding, Bonne Terre, Mo., $12.05.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (natural) Lower Lake Ports

(Any increase or decrease in R. R. freight rates, dock handling charges and taxes thereon effective after Apr. 1, 1948, are for buyer's account.)

Old range bessemer	$6.60
Old range nonbessemer	6.45
Mesabi bessemer	6.35
Mesabi nonbessemer	6.20
High phosphorus	6.20

Eastern Local Ore

Cents, units, del. E. Pa.

Foundry and basic 56.62% contract	15.25

Foreign Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%	15.00
Brazil iron ore, 68-69%	19.50

Tungsten Ore

Wolframite and scheelite per short ton unit, duty paid	$26–$28

Manganese Ore

48-50%, duty paid, f.o.b. cars, New York, Philadelphia, Baltimore, Norfolk, Va., Mobile, Ala., New Orleans, 67.60c-72.60c.

Chrome Ore

Gross ton f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S.C., plus ocean freight differential for delivery to Portland, Oreg., and/or Tacoma, Wash. (S S paying for discharge; dry basis, subject to penalties if guarantees are not met.)

Indian and African	
48% 2.8:1	$37.50
48% 3:1	39.00
48% no ratio	31.00
South African (Transvaal)	
44% no ratio	$25.50-$26.00
45% no ratio	26.50
48% no ratio	29.00-30.00
50% no ratio	29.50-30.50
Brazilian—nominal	
44% to 2.5:1 lump	$33.65
Rhodesian	
45% no ratio	$27-$27.50
48% no ratio	30.00
48% 3:1 lump	39.00
Domestic (seller's nearest rail)	
48% 3:1	$39.00

Molybdenum

Sulphide conc., lb, Mo., cont., Mines	$0.75

WAREHOUSE STEEL PRICES

Prices, cents per pound, for delivery within switching limits, subject to extras.

	SHEETS			STRIP		BARS				PLATES	
	H-R 10 Ga.	C-R 17 Ga.	Gal. *10 Ga.	†H-R	†C-R	H-R Rds. ⅜" to 3"	C-F Rds. ½" & up	H-R Alloy **4140	Standard Structural Shapes	Carbon ⅜"-¾"	Floor ⅜" & Thicker
Boston (city) ..	5.84	6.64	7.84	6.04	6.90	5.69	6.39	8.24-9.74	5.54	5.89	7.34
Boston (c'try) .	5.69	6.49	7.69	5.89	6.75	5.54	6.24	8.09-9.59	5.39	5.74	7.19
New York (city)	5.73-5.80	6.73	7.74-7.83	6.08-6.28	...	5.73	6.58	8.67	5.52-5.78	5.98	7.48
New York(c'try)	5.53-5.60	6.53	7.54-7.63	5.88-6.08	...	5.53	6.38	...	5.32-5.58	5.78	7.28
Phila. (city)...	5.50-5.86	6.61-6.81	7.47-7.67	5.46-5.81	...	5.57-5.65	6.31	8.39	5.24-5.40	5.52-5.65	6.73-7.16
Phila. (c'try)..	5.35-5.71	6.46-6.66	7.32-7.52	5.31-5.66	...	5.42-5.50	6.16	8.24	5.09-5.25	5.37-5.50	6.58-7.01
Balt. (city) ...	5.43†	6.33	7.23	5.49	...	5.54	...	...	5.48	5.68	7.13
Balt. (c'try) ..	5.28†	6.18	7.08	5.34	...	5.39	...	...	5.33	5.53	6.98
Norfolk, Va. ..	5.75	...	...	...	...	6.00	7.00	...	6.00	6.00	7.50
Wash. (w'hse) .	5.81-5.97	...	...	5.87	...	5.88-5.92	6.58	...	5.82-5.86	6.02-6.06	7.47-7.51
Buffalo (del) ..	5.00	5.90	7.80	5.71	6.50	5.20	6.05	10.10	5.25	5.50	7.06
Buffalo (w'hse)	4.85	5.75	7.65	5.56	6.35	5.05	5.90	9.95	5.10	5.35	6.91
Pitts. (w'hse) .	4.85-5.00§	5.75-5.85[8]	7.15-7.70	5.00-5.35	5.95-6.00	4.90-5.10	5.65	7.65	4.90-5.15	5.05-5.25	6.55
Det. (w'hse)...	4.85-5.00§	5.75-5.85[8]	7.15	5.00-5.35	5.95-6.00	5.45	6.17	8.12	5.45	5.65-5.80	7.10
Cleveland (del.)	5.13-5.90‡‡	5.90-6.29	7.34-8.00‡‡	5.17-5.69	6.45-6.85	5.30-5.35	6.05-6.10	8.24-8.54	5.34-5.60	5.50-5.55	6.95-7.00
Cleve. (w'hse) .	4.98-5.75	5.75-6.14	7.19-7.85	5.02-5.54	6.30-6.70	5.15-5.20	5.90-5.95	8.09-8.39	5.19-5.45	5.35-5.40	6.80-6.85
Cincin. (w'hse).	5.26	6.11	7.60	5.52	6.07	5.52	6.07	...	5.37	5.61	6.91
Chicago (city)..	5.00-5.20	5.90‡[8]	7.30	5.00	6.64-6.80	5.05	5.85	8.25[9]	5.05	5.25	6.70
Chicago (w'hse)	4.85-5.05	5.75‡[8]	7.15	4.85	6.49-6.65	4.90	5.70	8.10[9]	4.90	5.10	6.55
Milwaukee (city)	5.37	6.07‡[8]	7.47	5.17	6.81-6.97	5.22	6.02	8.42[9]	5.22	5.42	6.87
St. Louis (del.)	5.34§	6.24[8]	7.44	5.34	6.64	5.39	6.19[12]	6.64	5.39	5.59	7.04
St. L. (w'hse).	5.19§	6.09[8]	7.29	5.19	6.49	5.24	6.04[12]	9.49	5.24	5.44	6.89
Birm'ham (city)	5.20§	...	6.60	5.20	...	5.15	6.66	...	5.15	5.40	7.41-7.66
Birm'ham(c'try)	5.05§	...	6.45	5.05	...	5.00	6.51	...	5.00	5.25	7.26-7.51
Omaha, Nebr...	6.07	...	9.33	6.07	...	6.12	6.92	...	6.12	6.32	7.77
Los Ang. (city)	6.55§	8.05	8.20†	6.75	9.50	6.20	8.00-8.50	...	6.70	6.40	8.15
L. A. (w'hse) .	6.40§	7.90	8.05†	6.60	9.35	6.05	7.85-8.35	...	6.55	6.25	8.00
San Francisco .	5.95[21]	7.15	8.05	6.75[21]	8.25[15]	5.90[21]	7.55	10.20‡‡	5.90	7.60	8.10
Seattle-Tacoma.	6.35[17]	7.90[5]	8.40	6.70[17]	...	6.20[17]	8.15[1]	9.45[2]	6.30[17]	6.35[17]	8.40[17]

Base Quantities: 400 to 1999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold finished bars, 1000 lb and over; galvanized sheets, 450 to 1499 lb; [1]—1500 lb and over; [2]—1000 to 4999 lb; [3]—450 to 39,999 lb; [4]—three to 24 bundles; [5]—450 to 1499 lb; [6]—400 to 14,999 lb; [8]—400 to 1499 lb; [9]—1000 to 1999 lb; [11]—1000 to 39,999 lb; [12]—1000 lb and over; [15]—2000 lb and over; [17]—300 to 999 lb; [18]—1500 to 1999 lb; [19]—1500 to 39,999 lb; [20]—400 to 3999 lb; [21]—400 lb and over; [22]—500 to 1499 lb; [23]—Price (but not other price in range) applies to any and all quantities.

* Includes gage and coating extra, except Birmingham (coating extra excluded); † does not include gage extras; ‡ 15 gage; § 18 gage and heavier; ** as rolled; †† add 0.40 for sizes not rolled in Birmingham; ‡‡ top level of quoted range is nominal.

Bolts, Nuts

Prices to consumers, f.o.b. midwestern plants, Sellers reserve right to meet competitors' prices, if lower. Additional discounts on carriage and machine bolts, 5 for carloads; 15 for full containers, except tire and plow bolts.

Carriage and Machine Bolts

½-in. and smaller; up to 6 in. in length	35 off
⅝ and ⅝ x 6-in. and shorter	37 off
¾-in. and larger x 6-in. and shorter..	34 off
All diameters longer than 6-in.	30 off
Tire bolts	25 off
Plow bolts	47 off
Lag bolts, 6 in. and shorter	37 off
Lag bolts, longer than 6 in.	35 off

Stove Bolts

In packages, nuts separate, 58½-10 off; bulk 70 off on 15,000 of 3-in. and shorter, or 5000 over 3 in., nuts separate.

Nuts

Semifinished hexagon	A.S. Light	A.S. f.o.b. Reg. and Heavy
⅞-in. and smaller	41 off	.....
½-in. and smaller	.....	38 off
⅛-in.-1-in.	39 off	.....
⅜-in.-1-in.	.....	37 off
1⅛-in.-1½-in.	37 off	35 off
1⅝-in. and larger	34 off	28 off

Additional discount of 15 for full containers.

Hexagon Cap Screws (Packaged)

Upset 1-in. smaller by 6-in. and shorter (1020 bright)	46 off
Upset (1035 heat treated) ⅝ and smaller x 6 and shorter	40 off
¾, ⅞, & 1 x 6 and shorter	35 off

Square Head Set Screws

Upset 1-in. and smaller	51 off
Headless, ¼-in. and larger	31 off

Rivets

F.o.b. midwestern plants

Structural ½-in. and larger	6.75c
⅞-in. and under	48 off

Washers, Wrought

F.o.b. shipping point, to jobbers..Net to $1 off

FERROALLOY PRODUCT PRICES

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si) Carlot per gross ton, $57, Palmerton, Pa.; $66, Pittsburgh and Chicago; (16% to 19% Mn.) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $160 per gross ton of alloy, c.l., packed, $172; gross ton lots, packed, $187; less gross ton lots, packed, $204; f.o.b. Alloy, W. Va., Niagara Falls, N. Y.; or Welland, Ont. Base price; $165, Rockwood, Tenn.; $162, f.o.b. Birmingham and Johnstown, Pa., furnaces; $160, Sheridan, Pa.; $163, Etna, Pa. Shipment from Pacific Coast warehouses by one seller add $31 to above prices, f.o.b. Los Angeles, San Francisco, Portland, Oreg. Shipment from Chicago warehouse, ton lots, $201; less gross ton lots, $218 f.o.b. Chicago. Add or subtract $2 for each 1%, or fraction thereof, of contained manganese over 82% and under 78%.

Low-Carbon Ferromanganese, Regular Grade: (Mn 80-85%). Carload, lump, bulk, max. 0.10% C, 24.75c per lb of contained Mn, carload packed 26.0c, ton lot 27.1c, less ton 28.3c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 0.75% C—max. 7% Si. **Special Grade:** (Mn 90% approx., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max., Si 1.5% max.). Carload, lump, bulk 18.15c per lb of contained Mn, carload packed 18.9c, ton lot 20.0c, less ton 21.2c, Delivered. Spot, add 0.25c.

Manganese Metal: (Mn 96% min., Fe 2% max., Si 1% max., C 0.20% max.). Carload, 2" x D, packed 35.5c per lb of metal, ton lot 37c, less ton 39c. Delivered. Spot, add 2c.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 8.6c per lb of alloy, carload packed, 9.35c, ton lot 10.25c, less ton 11.25c. Freight allowed. For 2% C grade, Si 15-17.5%, deduct 0.2c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 20.5c per lb of contained Cr, c.l., packed 21.4c, ton lot 22.55c, less ton 23.95c. Delivered. Spot, add 0.25c.

"SM" High-Carbon Ferrochrome: (Cr 60-65%, Si 4-6%, Mn 4-6%, C 4-6%). Add 1.1c to high-carbon ferrochrome prices.

Foundry Ferrochrome: (Cr 62-66%, C 5-7%). Contract, c.l., 8MxD, bulk 22.0c per lb of contained Cr, c.l., packed 22.9c, ton 24.25c, less ton 26.0c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max. 0.03% C 31.85c per lb of contained Cr, 0.04% C 29.75c, 0.05% C 29.25c, 0.06% C 28.75c, 0.10% C 28.25c-28.5c, 0.15% C 28.0c, 0.20% C 27.75c, 0.50% C 27.5c, 1% C 27.25c, 2% C 27.0c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

"SM" Low-Carbon Ferrochrome: (Cr 62-66%, Si 4-6%, Mn 4-6%, add C 1.25% max.). Contract, carload, lump, bulk 27.75c per lb of contained chromium, carload, packed 28.85c, ton lot 30.05c, less ton 31.85c. Delivered. Spot add 0.25c.

Low-Carbon Ferrochrome, Nitrogen Bearing: Add 5c to 0.10% C low-carbon ferrochrome prices for approx. 0.75% N. Add 5c for each 0.25% of N above 0.75%.

Chromium Metal: (Mn 97% Cr and 1% Fe). Contract, carload, 1" x D; packed, max. 0.50% C grade, $1.03 per lb of contained chromium, ton lot $1.05, less ton $1.07. Delivered. Spot add 5c.

SILICON ALLOYS

20-30% Ferrosilicon: Contract, carload, lump, bulk, 16.50-17.50c per lb of contained Si; packed 18.90c; ton lots 20.00c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 10.5c per lb of contained Si, carload

(*Please turn to Page* 122)

Mercury Prices Advance $15

Rise in domestic market follows sharp advance abroad. Premium for antimonial lead cut $25 a ton. Trading in major metal markets is quiet with prices steady

New York—A sharp advance in mercury prices and an equally sharp reduction in premium for antimonial lead featured an otherwise quiet nonferrous metal market last week. Holiday influences, coupled with shortages of metal for prompt shipment, kept trading at a low level. Prices of major metals remained unchanged.

Mercury—Domestic mercury advanced $15 per 76-pound flask Dec. 21 to the basis of $94 a flask for lots of 100 flasks. The advance here was attributed to an upward adjustment in prices abroad. According to London cables, the Spanish-Italian mercury-producing combine, "Mercurio Europeo," increased prices $14 a flask on the same day to the basis of $70 a flask at Spanish or Italian ports. The former price of $56 had been in effect since May 24 when it was lifted $2. The cost to United States consumers now for Spanish-Italian metal will be about $92 at New York after adding the $19.25 a flask import duty plus freight, insurance and other charges.

A development likely to stem from the advance is the possibility of the reopening of some quicksilver mines in the United States that have been closed because of the previous low price. During 1943, peak output of the war period, United States mines turned out 51,929 flasks of mercury. In 1947, output had dropped to 23,200 flasks.

The latest available figures for Spanish quicksilver production show 1946 output estimated at 41,000 flasks. In 1941, peak output was 86,473 flasks. Italian production in 1946 was placed at 49,314 flasks while in 1941 output was 84,160 flasks. All of the estimated 2700 flasks of Japanese accumulated war material have been sold, according to unofficial reports.

Copper—Supply situation in copper remained extremely tight last week, as the strike at Kennecott Copper Corp.'s Utah properties continued for the ninth week. Trading in both the domestic and export markets was practically at a standstill with prices 23.50c, Connecticut, and f.a.s., New York, respectively. The scrap market has been stabilized, at least temporarily, on the basis of 20.50c for No. 1 copper wire.

Lead — Premium for antimonial lead was reduced $25 a ton last week by two important sellers to the basis of 1.50 cents per pound. Base prices are 21.50c a pound for lead content and 39.50c a pound for antimony content. The previous premium of $55 a ton had prevailed since mid-October. Secondary refined lead, which recently was offered at prices up to 26.00c a pound, was offered last week as low as 23.50c a pound. Offerings of foreign metal were made at 24.25c a pound, c.i.f. New York. Despite the easier price tone in some sections of the market, demand continued to exceed supplies with price tone holding firm at 21.30c to 21.35c, St. Louis.

Zinc—Overall supply situation remains tight with actual bookings restricted to routine business at firm prices. New Jersey Zinc Co. has advanced its prices on all grades of zinc oxides 2 cents a pound, effective as of Jan. 1. The increase compensates the producer for the like advance in slab zinc prices about a month ago.

Tin—Stocks of pig tin held by the Office of Metals Reserve increased 1640 tons to a total of 46,454 tons as of Nov. 30 from the Oct. 31 total. The increase was due to the fact that a large portion of the unusually large allocations of 7379 tons could not be shipped during November on account of the longshoremen's strike. For the same reason, however, receipts were less than had been expected. A considerable tonnage of Siamese tin has been sold to consumers under an arrangement whereby it will be applied against their allocations in 1949.

Uranium Mining Expanding

Denver — John K. Gustafson, manager of raw materials operations, Atomic Energy Commission, said recently that good progress is being made in the commission's program for development of deposits of fissionable material. Under the plan initiated in April to stimulate the uranium mining industry of the Colorado Plateau area the following has been accomplished, according to Mr. Gustafson:

"Buying schedules, guaranteeing for three years increased prices for vanadium-uranium ores, have been established. An ore-buying station has been opened at the commission-owned mill at Monticello, Utah, and the mill is being prepared for operation in 1949. Contracts for the purchase of uranium production from the two private plants now operating have been extended with provision for the purchase of ore from independent miners on terms as favorable as the commissions schedules. Negotiations are nearing completion for contracts with private companies covering the rehabilitation and operation of the plant at Durango, Colo., and the plant at Uravan, Colo. It is expected that before the end of 1949 all five plants in the area will be in full operation. Also private industry may build a plant in western Utah to process copper-uranium ores found in Arizona and Utah. A high-grade uranium product would be sold to the commission."

He added that an important task yet to be completed is the development of a process to treat economically certain uranium-bearing ores which cannot be treated by existing methods. Prior to announcement of the commission's program last April, miners were receiving about 35 cents per pound of uranium and the market for ore was limited. The commission now pays about $3.50 per pound for uranium in average grade ore, including haulage and other allowances. The AEC also is accepting low-grade ore for which there had been no market previously.

Australia To Ship More Zinc

Sydney, Australia—A larger portion of Australian zinc will be sold abroad starting Jan. 1. Producers of the metal are dissatisfied with the extremely low official price fixed since 1939 for sale to the Australian home industry as compared with the much higher world price.

Because the government has failed to grant a higher price for the metal consumed at home, producers have decided to cut such domestic supplies 50 per cent and sell this added tonnage in the export market. It is presumed the metal would go to Great Britain since all of the excess Australian slab zinc output has been going to that country.

Since 1939, the sales price of Australian slab zinc to the home industry has been officially fixed at the equivalent of only slightly more than 3.00c a pound. Producers say this price is below the actual cost of production. The world price of zinc, in contrast, has held well above the government's official selling price in the domestic market.

Australian producers assert they can get roughly 19.00c a pound, delivered, for their output in the export market, since American consumers are paying 17.50c a pound while Mexican produced zinc is selling at 18.00c a pound at Gulf ports which would be equal to around 19.00c, delivered, to Great Britain.

Australian slab zinc production has been running at an annual rate of 84,000 short tons. Home consumption, stimulated by the low price, is around 47,000 short tons a year. The remaining 37,000 tons has been exported to Great Britain at the world price.

Adopts Firm Price Policy

Pittsburgh — American Radiator & Standard Sanitary Corp. has returned to a firm price policy in the sale of its heating and plumbing equipment. Theodore E. Mueller, president, said the company will now accept orders from the company's wholesale distributors at prices prevailing at date of order.

He explained that the new price policy was made possible by the better flow of raw materials into the company's plants at prices which American-Standard believes will remain substantially near present levels. He added that the company has been able to achieve consistently high production and has shortened the time lag between placement of orders and delivery of finished goods.

"The company is mindful of the need for stable price conditions in the construction industry," Mr. Mueller said, "and this step is our share toward making it possible for consumers to know the cost of heating and plumbing products before undertaking building or modernization programs."

NONFERROUS METAL PRICES

(Cents per pound, carlots, except as otherwise noted)

Copper: Electrolytic, 23.50c, Conn. Valley; Lake, 23.62½c, Conn. Valley.

Brass Ingot: 85-5-5-5 (No. 115) 21.50-22.00c; 88-10-2 (No. 215) 31.00c; 80-10-10 (No. 305) 27.25c; No. 1 yellow (No. 405) 17.50c.

Zinc: Prime western 17.50c, brass special 17.75c, intermediate 18.00c, East St. Louis; high grade 18.50c, delivered.

Lead: Common 21.30-21.35c, chemical and corroding 21.40c, St. Louis.

Primary Aluminum: 99% plus, ingots 17.00c, pigs 16.00c. Base prices for 10,000 lb and over, fob shipping point, freight allowed.

Secondary Aluminum: Piston alloy (No. 122 type) 26.50-27.00c; No. 12 foundry alloy (No. 2 grade) 25.75-26.50c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 28.00-30.00c; grade 2, 26.75-27.50c; grade 3, 25.75-26.25c; grade 4, 25.25-25.50c. Prices include freight at carload rate up to 75 cents per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over, 20.50c, fob Freeport, Tex.

Tin: Grade A, 99.8% or higher (including Straits) $1.03; grade B, 99.8% or higher, not meeting specifications for grade A, with 0.05% max. arsenic, $1.028; grade C, 99.65-99.79%, incl., $1.024; 99.5-99.649% $1.024, grade F, 98-98.999% $1.015 for tin content. Prices are ex-dock, New York, in 5-ton lots.

Antimony: American 99-99.8% and over but not meeting specifications below, 38.50c; 99.8% and over (arsenic 0.05% max.; other impurities, 0.1% max.) 39.00c, fob Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 40.00c; 25-lb pigs, 42.50c; shot nom.; "XX" nickel shot, 43.50c; "F" nickel shot or ingots, for addition to cast iron, 40.50c. Prices include import duty.

Mercury: Open market, spot, New York $94-$96 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $24.50 per lb contained Be.

Cadmium: "Regular" straight or flat forms, $2, del.; special or patented shapes, $2.10.

Cobalt: 97-98%, $1.65 per lb for 550 lb (keg); $1.67 per lb for 100 lb (case); $1.72 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York, 70.00c per ounce.

Platinum: $89-$96 per ounce.

Palladium: $24 per troy ounce.

Iridium: $110-$115 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill)

Sheet: Copper 37.18; yellow brass 34.59; commercial bronze, 95%, 37.23; 90%, 36.88; red brass, 85%, 36.01; 80%, 35.66; best quality, 35.33; nickel silver, 18%, 46.92; phosphor-bronze, grade A, 5%, 56.05.

Rods: Copper, hot rolled 33.28; cold drawn 34.28; yellow brass, free cutting, 38.16; commercial bronze, 95% 36.92; 90% 36.57; red brass, 85% 35.70; 80% 35.35.

Seamless Tubing: Copper 37.22; yellow brass 37.60; commercial bronze 90% 39.54; red brass 85% 38.92; 80% 38.57.

Wire: Yellow brass 34.88; commercial bronze, 95% 37.52; 90% 37.17; red brass, 85% 36.30; 80% 35.95; best quality brass 35.62.

Copper Wire: Bare, soft, fob eastern mills, c.l. 29.42½c, l.c.l. 29.92½-30.05c; weatherproof, fob eastern mills, c.l. 29.60-29.85c, l.c.l. 30.35c; magnet, delivered, c.l. 32.75-33.50c, 15,000 lb or more 33.00-33.75c, l.c.l. 33.50-34.25c.

ALUMINUM

Sheets and Circles: 2S and 3S mill finish c.l. (Two producers quote 1-cent per pound lower.)

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	26.9	...	...
0.135-0.096	12-48	27.4	...	...
0.095-0.077	12-48	27.9	26.0	29.6
0.076-0.068	12-48	28.5	26.2	29.8
0.067-0.061	12-48	28.5	26.2	29.8
0.060-0.048	12-48	28.7	26.4	30.1
0.047-0.038	12-48	29.1	26.6	30.4
0.037-0.030	12-48	29.5	27.0	30.9
0.029-0.024	12-48	29.9	27.3	31.3
0.023-0.019	12-36	30.5	27.7	31.8
0.018-0.017	12-36	31.1	28.3	32.6
0.016-0.015	12-36	31.8	28.9	33.5
0.014	12-24	32.7	29.7	34.6
0.013-0.012	12-24	33.6	30.4	35.5
0.011	12-24	34.6	31.3	36.7
0.010-0.0095	12-24	35.6	32.3	38.0
0.009-0.0085	12-20	36.8	33.4	39.5
0.008-0.0075	12-20	38.1	34.6	41.1
0.007	12-18	39.5	35.9	42.9
0.006	12-18	41.0	37.2	47.0

* Minimum length, 60 inches. † Maximum diameter, 24 inches.

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or distance across flats	—Round— R317-T4, 17S-T4	R317-T4	—Hexagonal— R317-T4	17S-T4
0.125	48.0	...	...	
0.156-0.203	41.0	...	...	
0.219-0.313	38.0	...	...	
0.344	37.0	...	47.0	
0.375	36.5	45.5	44.0	
0.406	36.5	...	...	
0.438	36.5	45.5	44.0	
0.469	36.5	...	...	
0.500	36.5	45.5	44.0	
0.531	36.5	...	...	
0.563	36.5	...	41.5	
0.594	36.5	...	...	
0.625	36.5	43.0	41.5	
0.656	36.5	...	...	
0.688	36.5	...	41.5	
0.750-1.000	35.5	40.5	39.0	
1.063	35.5	...	37.5	
1.125-1.500	34.5	39.0	37.5	
1.563	34.5	...	37.5	
1.625	33.5	...	36.5	
1.688-2.000	33.5	...	...	
2.125-2.500	32.5	...	...	
2.625-3.375	31.5	...	...	

LEAD

(Prices to jobbers, fob Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more, $27.25 per cwt.; add 50c per cwt., 10 sq ft to 140 sq ft. Pipe: Full coils, $27.25 per cwt; cut coils, $27.50. Traps and Bends: List price plus 80%.

ZINC

Sheets, 22.00-22.50c, fob mill, 36,000 lb and over. Ribbon zinc in coils, 20.75-21.50c, fob mill, 36,000 lb and over. Plates, not over 12-in., 19.75-20.50c; over 12-in., 20.75-21.50c.

NICKEL

(Base prices, fob mill.)

Sheets, cold-rolled, 60.00c. Strip, cold-rolled 66.00c. Rods and shapes, 56.00c. Plates 58.00c. Seamless tubes, 89.00c.

MONEL

(Base prices, fob mill.)

Sheets, cold-rolled 47.00c; Strip, cold-rolled, 50.00c. Rods and shapes, 45.00c. Plates, 46.00c. Seamless tubes, 80.00c. Shot and blocks, 40.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.312 in. in diameter, less than 25 lb, 52.00-56.00c; 25 to 99 lb, 42.00-46.00c; 100 lb to 4000 lb., 35.00-36.00c.

Plating Materials

Chromic Acid: 99.9%, flake, fob Philadelphia, carloads, 26.00c; 5 tons and over 26.50c; 1 to 5 tons, 27.00c; less than 1 ton, 27.50c.

Copper Anodes: Base, 2000 to 5000 lb; fob shipping point, freight allowed: Flat untrimmed 33.84c; oval 33.34c; electrodeposited, 31.09c; cast, 30.12c.

Copper Cyanide: 70-71% Cu, 100-lb drums, 46.00c, fob Niagara Falls, N. Y.

Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 900 lb, 16.00c; 1000 to 19,900 lb, 15.00c, fob Niagara Falls, N. Y.

Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 250 lb, 26.25c; over 250 lb, 25.25c, fob Cleveland.

Nickel Anodes: Rolled oval, carbonized, carloads, 56.00c; 10,000 to 30.000 lb, 57.00c; 3000 to 10,000 lb, 58.00c; 500 to 3000 lb, 59.00c; 100 to 500 lb, 61.00c; under 10 lb, 64.00c; fob Cleveland. Add 1 cent for rolled depolarized.

Nickel Chloride: 100-lb kegs, 26.50c; 275-lb, or 500-lb bbl, 24.50c, fob Cleveland, freight allowed on barrels, or 3 or more kegs.

Tin Anodes: Bar, 1000 lb and over 119.00c; 500 to 999 lb, 119.50c; 200 to 499 lb, 120.00c; less than 200 lb, 121.50c; ball, 1000 lb and over, 121.25c; 500 to 999 lb, 121.75c; 200 to 499 lb, 122.25c; less than 200 lb, 123.75c fob Sewaren, N. J

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers 71.8c; 100 or 300 lb drums only, 100 to 500 lb, 63.6c; 600 to 1900 lb, 61.2c; 2000 to 9900 lb, 59.4c. Prices fob Sewaren, N. J.

Zinc Cyanide: 100-lb drums 39.25c, fob Cleveland; 39.00c, Detroit; 38.00c, fob Philadelphia.

Stannous Sulphate: Less than 2000 lb, in 100 lb kegs, 100.00c, in 400 lb bbl. 99.00c; more than 2000 lb, in 100 lb kegs, 99.00c, in 400 lb bbl, 98.00c, f.o.b. Carteret, Wis.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 15,000 lb fob shipping point.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	21.125	21.125	20.375
Yellow brass	18.375	18.625	18.125
Commercial Bronze			
95%	20.250	20.000	19.500
90%	20.125	19.875	19.375
Red brass			
85%	20.000	19.750	19.250
80%	19.875	19.625	19.125
Best Quality (71-79%)	19.750	19.500	19.000
Muntz Metal	18.250	18.000	17.500
Nickel, silver, 10%	20.250	20.000	10.000
Phos. bronze, A	22.625	22.375	21.375
Naval brass	18.750	18.500	18.000
Manganese bronze	18.750	18.500	17.875

BRASS INGOT MAKERS BUYING PRICES

(Cents per pound, fob shipping point, carload lots)

No. 1 copper 19.50c, No. 2 copper 18.50, light copper 17.50, composition red brass 16.75, auto radiators 14.25, heavy yellow brass 12.75, brass pipe, 13.25.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 20.50, No. 2 copper 1950, light copper 1850, refinery brass (60% copper), per dry copper content 18.00-1900.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots or more)

Copper and Brass: Heavy copper and wire No. 1 18.50-19.00, No. 2 17.50-18.00, light copper 16.50-17.00, No. 1 composition red brass 14.50-15.00, No. 1 composition turnings 14.00-14.50, mixed brass turnings 8.75-9.00, new brass clippings 15.75-16.25, No. 1 brass rod turnings 12.75-13.25, light brass 8.75-9.25, heavy yellow brass 11.00-11.25, new brass rod ends 13.25-13.75, auto radiators, unsweated 12.75-13.00, cocks and faucets 12.25-12.50, brass pipe 12.75-13.25.

Lead: Heavy 18.50-19.00, battery plates 13.00-13.25, linotype and stereotype 19.50-20.00, electrotype 18.50-19.00, mixed babbitt 19.50-20.00, solder joints, 23.00-24.00.

Zinc: Old zinc 10.00-10.50, new die cast scrap 9.50-10.00, old die cast scrap 6.75-7.25.

Tin: No. 1 pewter 65.00-67.00, block tin pipe 83.00-84.00, No. 1 babbitt 51.00-54.00, siphon tops 50.00-52.00

Aluminum: Clippings 2S 16.50-17.00, old sheets 13.00-13.50, crankcase 13.00-13.50, borings and turnings 6.50-7.00, pistons, free of struts, 13.00-13.50.

DAILY PRICE RECORD

	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Nov. Avg.	23.50	21.325	16.580	103.00	17.00	38.50	40.00	73.655
Oct. Avg.	23.50	19.325	15.173	103.00	16.846	37.423	40.00	77.226
Dec. 1-23	23.50	21.30–21.35	17.50	103.00	17.00	38.50	40.00	70.00

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. E. St. Louis; Zinc, prime western, del. St. Louis; Tin, Straits, del. New York; Aluminum, primary ingots, 99%, del.; Antimony, bulk, fob Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery, unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

OPEN MARKET PRICES, IRON AND STEEL SCRAP

Prices are dollars per gross ton, including broker's commission, delivered at consumer's plant except where noted.

PITTSBURGH

No. 1 Heavy Melt. Steel	$42.50-43.00*
No. 2 Heavy Melt. Steel	42.50-43.00*
No. 1 Busheling	42.50-43.00*
Nos. 1, 2 Bundles	42.50-43.00
No. 3 Bundles	40.50-41.00
Machine Shop Turnings	37.50-38.00
Mixed Borings, Turnings	37.50-38.00
Short Shovel Turnings.	38.00-39.00
Cast Iron Borings	39.50-40.00
Bar Crops and Plate	49.00-50.00
Low Phos. Steel	49.50-50.00
Heavy Turnings	39.50-40.00

Cast Iron Grades

No. 1 Cupola	65.00-66.00†
Machinery Cast	72.00-73.00†
Charging Box Cast	61.00-62.00†
Heavy Breakable Cast.	60.00-61.00
Malleable	74.00-75.00
Brake Shoe	57.50-58.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	43.50-44.00
R.R. Malleable	75.00-80.00
Axles	55.25-56.25
Rails, Rerolling	59.00-60.00
Rails, Random Lengths	56.00-57.00
Rails, 3 ft and under.	60.00-61.00
Rails, 18 in. and under	61.50-62.00
Railroad Specialties	56.00-57.50†
Uncut Tires	54.50-55.00
Angles, Splice Bars	53.00-54.00

* Plus applicable freight springboard. † Nominal; no recent sales.

CLEVELAND

No. 1 Heavy Melt. Steel	$42.00-42.50*
No. 2 Heavy Melt. Steel	42.00-42.50*
No. 1 Busheling	42.00-42.50*
Nos. 1 & 2 Bundles	42.00-42.50*
Machine Shop Turnings	37.00-37.50
Mixed Borings, Turnings	36.50-38.50
Short Shovel Turnings.	38.00-38.50
Cast Iron Borings	38.00-38.50
Bar Crops and Plate	47.00-47.50
Punchings & Plate Scrap	47.00-47.50
Heavy Turnings	42.00-43.00
Alloy Free Turnings	40.00-41.00
Cut Structurals	48.50-51.50

Cast Iron Grades

No. 1 Cupola	71.00-72.00
Charging Box Cast	58.00-60.00
Stove Plate	65.00-67.00
Heavy Breakable Cast.	55.00-57.00
Unstripped Motor Blocks	55.00-57.00
Malleable	75.00-78.00
Brake Shoes	53.00-55.00
Clean Auto Cast	70.00-73.00
No. 1 Wheels	64.00-66.00
Burnt Cast	59.00-61.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	43.00-44.00*
R.R. Malleable	79.00-81.00
Rails, Rerolling	62.00-68.00
Rails, Random Lengths	60.00-61.00
Rails, 3 ft and under.	63.00-66.00
Cast Steel	55.00-57.00
Railroad Specialties	58.00-60.00
Uncut Tires	58.00-59.00
Angles, Splice Bars	61.00-63.00

* Plus applicable freight springboard on earmarked material.

VALLEY

No. 1 Heavy Melt. Steel	$42.50-43.00*
No. 2 Heavy Melt. Steel	42.50-43.00
No. 1 Bundles	42.50-43.00
Machine Shop Turnings	37.00-39.00
Short Shovel Turnings.	39.00-39.50
Cast Iron Borings	38.50-39.00
Low Phos.	48.50-50.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	43.00-44.00*

* Plus applicable freight springboard.

MANSFIELD

Machine Shop Turnings	$37.50-38.00
Short Shovel Turnings.	39.50-40.00

CINCINNATI

No. 1 Heavy Melt. Steel	$42.00
No. 2 Heavy Melt. Steel	42.00
No. 1 Busheling	42.00
Nos. 1 & 2 Bundles	42.00
Machine Shop Turnings	36.00
Mixed Borings Turnings	36.00
Short Shovel Turnings.	38.00
Cast Iron Borings	37.00

Cast Iron Grades

No. 1 Cupola Cast	63.00
Charging Box Cast	53.00
Heavy Breakable Cast.	59.00
Stove Plate	55.00
Unstripped Motor Blocks	56.00
Brake Shoes	50.00
Clean Auto Cast	63.00
Drop Broken Cast	71.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	43.00
R.R. Malleable	75.00
Rails, Rerolling	62.00
Rails, Random Lengths	58.00
Rails, 18 in. and under	63.00

DETROIT

(Brokers' buying prices, fob shipping point)

No. 1 Heavy Melt. Steel	$37.50-38.00
No. 1 Busheling	37.50-38.00
Nos. 1 & 2 Bundles	37.50-38.00
No. 3 Bundles	37.50-38.00
Machine Shop Turnings	31.50-32.00
Mixed Borings, Turnings	31.50-32.00
Short Shovel Turnings.	32.50-33.00
Cast Iron Borings	32.50-33.00
Punchings & Plate Scrap	42.50-43.00

Cast Iron Grades

No. 1 Cupola Cast	60.00-65.00
Heavy Breakable Cast.	54.00-59.00
Clean Auto Cast	60.00-65.00

BUFFALO

No. 1 Heavy Melt. Steel	$48.00-49.00
No. 2 Heavy Melt. Steel	41.75-42.25
No. 1 Busheling	41.75-42.25
No. 1 & 2 Bundles	41.75-42.25
Machine Shop Turnings	39.50-40.00
Mixed Borings, Turnings	39.50-40.00
Cast Iron Borings	39.50-40.00
Short Shovel Turnings.	40.50-41.00
Low Phos	49.00-51.00

Cast Iron Grades

No. 1 Cupola	67.00-68.00
Mixed Cupola	63.00-65.00
Heavy Breakable Cast.	55.00-57.00
Malleable	70.00-75.00
Clean Auto Cast	70.00-72.00

Railroad Scrap

Rails, 3 ft. and under.	59.00-61.00
Railroad Specialties	58.00-60.00

PHILADELPHIA

No. 1 Heavy Melt. Steel	$45.00-45.50
No. 2 Heavy Melt. Steel	41.50
No.1 Busheling	41.50
Nos. 1 & 2 Bundles	41.50
No. 3 Bundles	39.50
Machine Shop Turnings	37.50
Mixed Borings, Turnings	37.50
Short Shovel Turnings.	41.00-41.50
Bar Crop and Plate	49.00-51.00
Punchings & Plate Scrap	49.00-51.00
Cut Structurals	49.00-51.00
Elec. Furnace Bundles.	47.00-48.00
Heavy Turnings	45.50-46.50
No. 1 Chemical Borings	41.00-41.50

Cast Iron Grades

No. 1 Cupola Cast	62.00-63.00
No. 1 Machinery Cast.	65.00-66.00
Charging Box Cast	62.00-62.50
Heavy Breakable Cast.	62.00-62.50
Unstripped Motor Blocks	59.50
Malleable	80.00-82.00
Clean Auto Cast	62.00-63.00
No. 1 Wheels	71.00-72.00

NEW YORK

(Brokers buying prices, fob shipping point)

No. 1 Heavy Melt. Steel	$39.00
No. 2 Heavy Melt. Steel	37.00
No. 1 Busheling	37.00
Nos. 1 & 2 Bundles	37.00
No. 3 Bundles	35.00
Machine Shop Turnings	29.00-29.50
Mixed Borings, Turnings	29.00-29.50
Short Shovel Turnings.	30.00-31.50
Punching & Plate Scrap	41.00-42.00
Cut Structurals	41.00-42.00
Elec. Furnace Bundles.	41.00-42.00

Cast Iron Grades

No. 1 Cupola Cast	57.00
Charging Box Cast	57.00
Heavy Breakable	57.00-58.00
Unstripped Motor Blocks	53.50-54.50
Malleable	68.00-69.00

BOSTON

(Fob shipping point)

No. 1 Heavy Melt. Steel	$38.90
No. 2 Heavy Melt. Steel	34.40
No. 1 Bundles	34.40
No. 1 Busheling	34.40
Machine Shop Turnings	29.90
Mixed Borings, Turnings	29.90
Short Shovel Turnings.	31.90
Bar Crops and Plate	40.00-41.00
Punching & Plate Scrap	40.00-41.00
Chemical Borings	37.00-38.00

Cast Iron Grades

No. 1 Cupola Cast	60.00-65.00
Heavy Breakable Cast.	52.00-53.00
Stove Plate	54.00-55.00
Unstripped Motor Blocks	50.00-52.00
Clean Auto Cast	54.00-56.00

CHICAGO

No. 1 Heavy Melt. Steel	$41.50-42.00
No. 2 Heavy Melt. Steel	41.50-42.00
No. 1 Bundles	41.50-42.00
No. 2 Bundles	41.50-42.00
No. 3 Bundles	39.50-40.00
Machine Shop Turnings	36.50-37.00
Mixed Borings, Turnings	36.50-37.00
Short Shovel Turnings.	38.50-39.00
Cast Iron Borings	37.50-38.00
Bar Crops and Plate	46.00-47.00
Punchings	47.00-48.00
Elec. Furnace Bundles.	44.50-45.00
Heavy Turnings	41.00-41.50
Cut Structurals	46.50-47.00

Cast Iron Grades

No. 1 Cupola Cast	70.00-71.00
Clean Auto Cast	70.00-71.00
No. 1 Wheels	60.00-62.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	44.00-45.00
Malleable	81.00-82.00
Rails, Rerolling	69.00-70.00
Rails, Random Lengths	59.00-60.00
Rails, 3 ft and under.	60.00-61.00
Rails, 18 in. and under	62.00-63.00
Railroad Specialties	51.00-52.00
Angles, Splice Bars	56.50-58.00

ST. LOUIS

No. 1 Heavy Melt. Steel	$44.00-45.00
No. 2 Heavy Melt. Steel	40.00-41.00
Machine Shop Turnings	35.00-36.00
Short Shovel Turnings.	36.50-37.50

Cast Iron Grades (Fob shipping point)

No. 1 Cupola Cast	63.00-65.00
Mixed Cast	56.00-58.00
Heavy Breakable Cast.	59.00-60.00
Brake Shoes	58.00-59.00
Clean Auto Cast	65.00-67.00
Burnt Cast	59.00-60.00

Railroad Scrap

R.R. Malleable	71.00-72.00
Rails, Rerolling	63.00-65.00
Rails, Random Lengths	56.00-59.00
Rails, 3 ft and under.	60.00-61.00
Uncut Tires	51.00-52.00
Angles, Splice Bars	54.00-56.00

BIRMINGHAM

No. 1 Heavy Melt. Steel	$39.50
No. 2 Heavy Melt. Steel	39.50
No. 1 Busheling	39.50
Nos. 1 & 2 Bundles	39.00
No. 3 Bundles	37.00
Long Turnings	24.50
Short Shovel Turnings.	26.00-27.00
Cast Iron Borings	25.00
Bar Crops and Plate	40.00
Cut Structurals	38.50

Cast Iron Grades

No. 1 Cupola Cast	63.00
Stove Plate	60.00-62.00
No. 1 Wheels	59.00-61.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	38.00
R.R. Malleable	nom.
Axles, Steel	50.00
Rails, Rerolling	53.00-55.00
Rails, Random Lengths	45.00-48.00
Rails, 3 ft and under.	53.00-55.00
Angles and Splice Bars	52.00-53.00

SAN FRANCISCO

No. 1 Heavy Melt. Steel	*$27.50
No. 2 Heavy Melt Steel	*27.50
No. 1 Busheling	*27.50
Nos. 1 & 2 Bundles	*27.50
No. 3 Bundles	*24.50
Machine Shop Turnings	*18.00
Bar Crops and Plate	*27.50
Cast Steel	*27.50
Alloy Free Turnings	*18.00
Cut Structurals	*27.50

Cast Iron Grades

No. 1 Cupola Cast	50.00-65.00

Railroad Scrap

No. 1 Heavy Melting	*28.50
Axles	*34.00
Rails, Random Lengths	*29.00

* Fob California shipping point.

SEATTLE

No. 1 Heavy Melt. Steel	$29.00-30.00
No. 2 Heavy Melt. Steel	29.00-30.00
No. 1 Busheling	29.00-30.00
Nos. 1 & 2 Bundles	29.00-30.00
No. 3 Bundles	24.50
Machine Shop Turnings	21.00-22.50
Mixed Borings, Turnings	21.00-22.50
Punchings & Plate Scrap	35.00
Cut Structurals	26.00-28.00

Cast Iron Grades

No. 1 Cupola Cast	50.00
Heavy Breakable Cast.	35.00
Stove Plate	30.00
Unstripped Motor Blocks	32.50
Malleable	40.00
Brake Shoes	35.00
Clean Auto Cast	40.00
No. 1 Wheels	37.50-40.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	28.50
Railroad Malleable	30.00
Rails, Random Lengths	30.00-32.00
Angles and Splice Bars	28.50

LOS ANGELES

No. 1 Heavy Melt. Steel	$27.50
No. 2 Heavy Melt. Steel	27.50
Nos. 1 & 2 Bundles	27.50
Machine Shop Turnings	20.00
Mixed Borings, Turnings	15.50-16.00
Punchings & Plate Scrap	33.00-36.00

Cast Iron Grades

No. 1 Cupola Cast	45.00-50.00

HAMILTON, ONT.

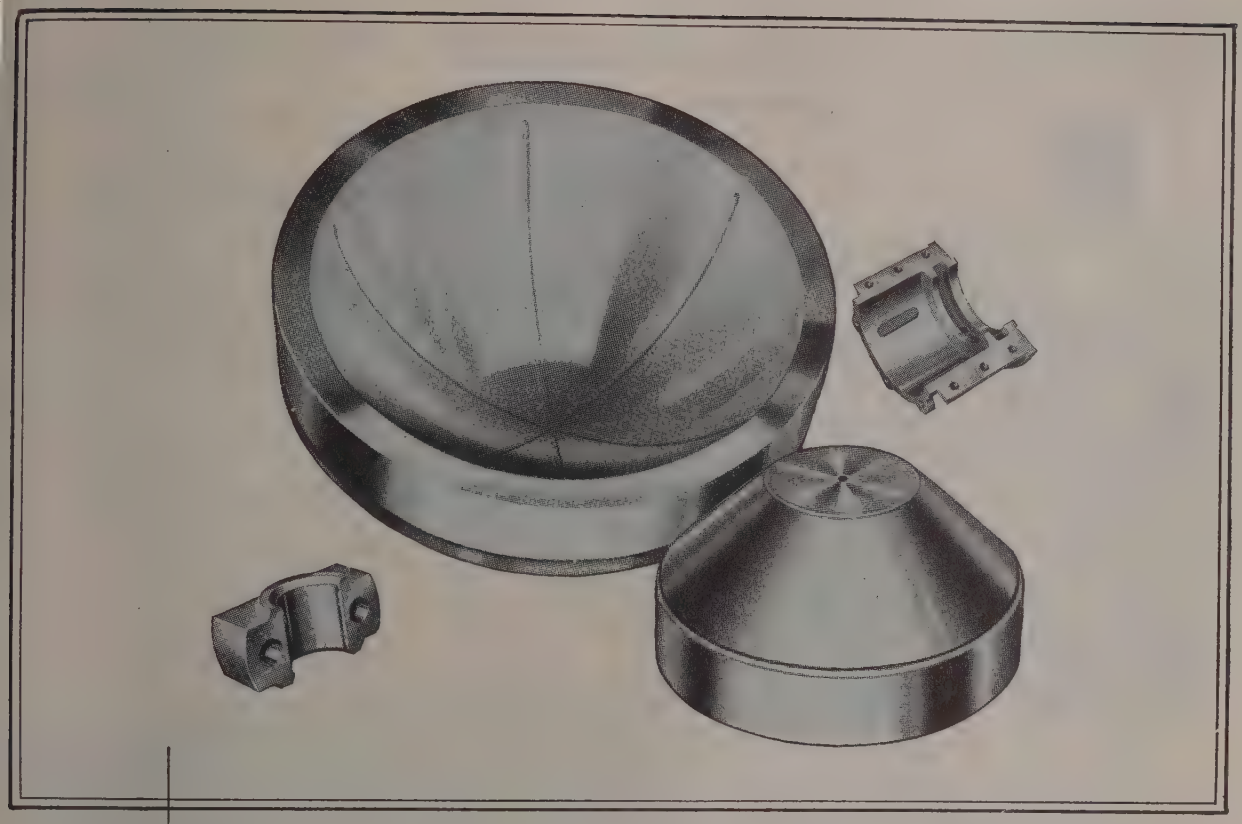
(Ceiling prices, delivered)

Heavy Melt.	$23.00
No. 1 Bundles	23.00
Mechanical Bundles	21.00
Mixed Steel Scrap	19.00
Mixed Borings, Turnings	17.00
Rails, Remelting	23.00
Rails, Rerolling	26.00
Bushelings	17.50
Bushelings, new factory, prep'd	21.00
Bushelings, new factory, unprep'd	16.00
Short Steel Turnings	17.00

Cast Iron Grades*

No. 1 Cast	48.00-50.00
No. 2 Cast	44.00-45.00

* Removed from price control Aug. 9, 1947; quoted on basis of fob shipping point.



Large or Small—N-B-M Bearings are Better Bearings

You can get the benefit of National Bearing's research and engineering experience on any non-ferrous bearing application

The war against wear is universal—in a hydroelectric plant or a small lathe. Regardless of size, the best bearing is the bearing that is "N-B-M-engineered" for your own specific service conditions.

National Bearing Division—combined with American Brake Shoe Research offers you a unique service in the design and production of non-ferrous bearings. A service which covers every step in the process of solving your bearing problem—proper design, alloy, stress loading and lubrication.

In competitive selling every feature added to your product opens wider the door to a sale. When you plan to redesign bearings with an eye to longer and more trouble-free service, contact National Bearing Division for a fresh approach and the complete follow-through to the solution of your problem.

Whether the problem involves large bearings or small bearings—or non-ferrous castings of any description—use the specialized knowledge and engineering service of National Bearing Division.

N B M

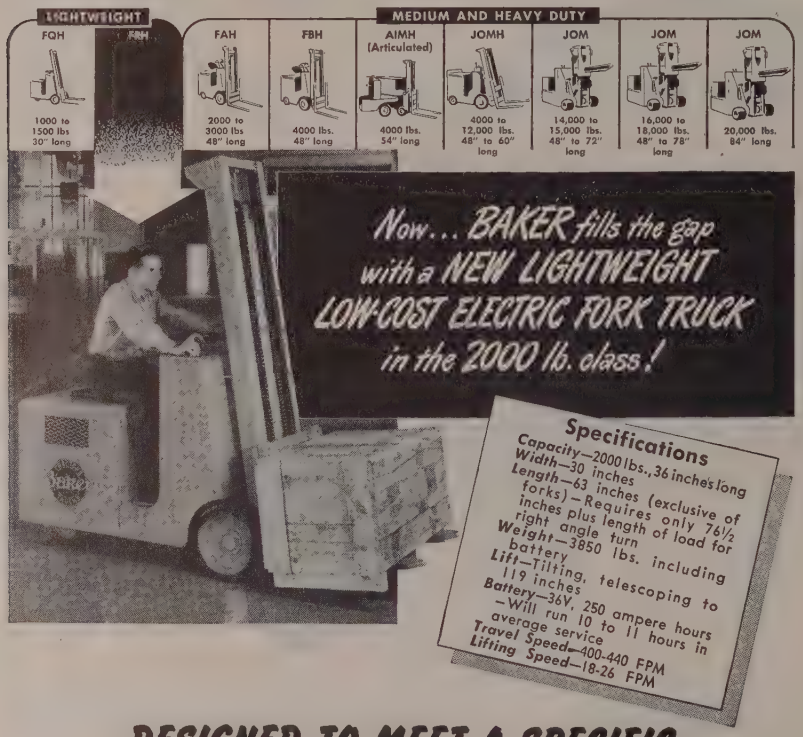
AMERICAN Brake Shoe COMPANY

NATIONAL BEARING DIVISION

ST. LOUIS • NEW YORK

PLANTS IN: ST. LOUIS, MO. • MEADVILLE, PA. • NILES, OHIO • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.

The BAKER Line of Electric Fork Trucks


LIGHTWEIGHT
MEDIUM AND HEAVY DUTY
FQH
FRH
FAH
FBH
AIMH (Articulated)
JOMH
JOM
JOM
JOM
1000 to 1500 lbs 30" long
2000 to 3000 lbs 48" long
4000 lbs. 48" long
4000 lbs. 54" long
4000 to 12,000 lbs. 48" to 60" long
14,000 to 15,000 lbs. 48" to 72" long
16,000 to 18,000 lbs. 48" to 78" long
20,000 lbs. 84" long
Now... BAKER fills the gap with a NEW LIGHTWEIGHT LOW-COST ELECTRIC FORK TRUCK in the 2000 lb. class!
Specifications
Capacity—2000 lbs., 36 inches long
Width—30 inches
Length—63 inches (exclusive of forks)—Requires only 76½ inches plus length of load for right angle turn
Weight—3850 lbs. including battery
Lift—Tilting, telescoping to 119 inches
Battery—36V, 250 ampere hours—Will run 10 to 11 hours in average service
Travel Speed—400-440 FPM
Lifting Speed—18-26 FPM

DESIGNED TO MEET A SPECIFIC DEMAND IN MATERIAL HANDLING

The Baker FQH 1000 lb. Fork Truck introduced a year ago received enthusiastic acceptance. It also disclosed the urgent need for a similar truck with greater capacity, and a 1500 lb. model was made available. Now Baker completes its line with the FRH-20, a light weight, low cost, highly maneuverable electric fork truck in the 2000 lb. field . . . This truck is ideal for plants where narrow aisles, limited floor capacity and low capacity elevators are factors and where loads can be limited to 2000 lbs., 36 inches long.

See this new truck in action at the Materials Handling Exposition, Philadelphia, Jan. 10-14, 1949.

Ideal for receiving, warehousing, shipping and other operations, where loads are limited to 2000 lbs.

BAKER INDUSTRIAL TRUCK DIVISION *of The Baker-Raulang Company*
2167 West 25th Street • Cleveland 13, Ohio
In Canada: Railway and Power Engineering Corporation, Ltd.

Baker INDUSTRIAL TRUCKS

Sheets, Strip . . .

Hot and cold-rolled sheet extras revised by leading eastern producer

Sheet Prices, Page 100

Philadelphia — Leading eastern sheet producer has revised extras on hot-rolled sheets, 18 gage and heavier, and all gages of cold-rolled sheets, effective Dec. 20. Action follows advances announced recently by certain mills in the Midwest and Pittsburgh areas and affects size, length, pickling, leveling, resquaring, normalizing and box annealing extras among others. Pickling extra is now 40 cents, against 25 cents previously; stretcher leveling, 50 cents, against 25 cents; normalizing 50 cents, against 25 cents; and resquaring, 10 per cent, against 5 per cent. Length extras have been generally increased, where extras formerly applied, and new extras have been established on some heretofore base classifications.

District sheet sellers are being alerted by home offices to keep an especially close check on developments at metalworking plants, not only with respect to current operations but to end-use demand for their products.

Metalworkng plants generally are more inventory-conscious than they have been at any time in recent years. This year-end it is believed more metalworking shops will be down for several days, or at least partially down, for a thorough check of stocks on hand, than has been the case for the past two years.

Soft spots in district sheet metalworking include radios, heating and ventilating equipment and stoves. One stove maker recently canceled some sheet tonnage with an eastern mill, although this is one of the few instances of this character to be reported to date in any of the major lines of steel products. On the other hand, there are a variety of sheet metal product manufacturers, led by automotive shops, who are pressing for all the tonnage they can get, and even stove makers claim they could do much better in some of the less expensive lines, if they were only able to get more enameling stock.

New York—Action by the Carnegie Illinois Steel Corp. and the American Steel & Wire Co., subsidiaries of United States Steel Corp., in reducing extras on their stainless steel products is expected to be followed by some other leading producers in the near future. This may go a long way toward stabilizing the situation in stainless.

Until at least late last week two producers in the Pittsburgh and seaboard areas had taken no action at all, or at least no important action, in modifying their schedules over recent weeks, despite various changes in other quarters. As a result these two interests, and also a third seller up until two weeks ago, have been holding a substantial competitive advantage.

Some producers, as a result of a disadvantageous competitive position, have been losing business that would normally go to them and consequently are now at a point where they can make relatively early deliveries. At least one producer can offer stain-

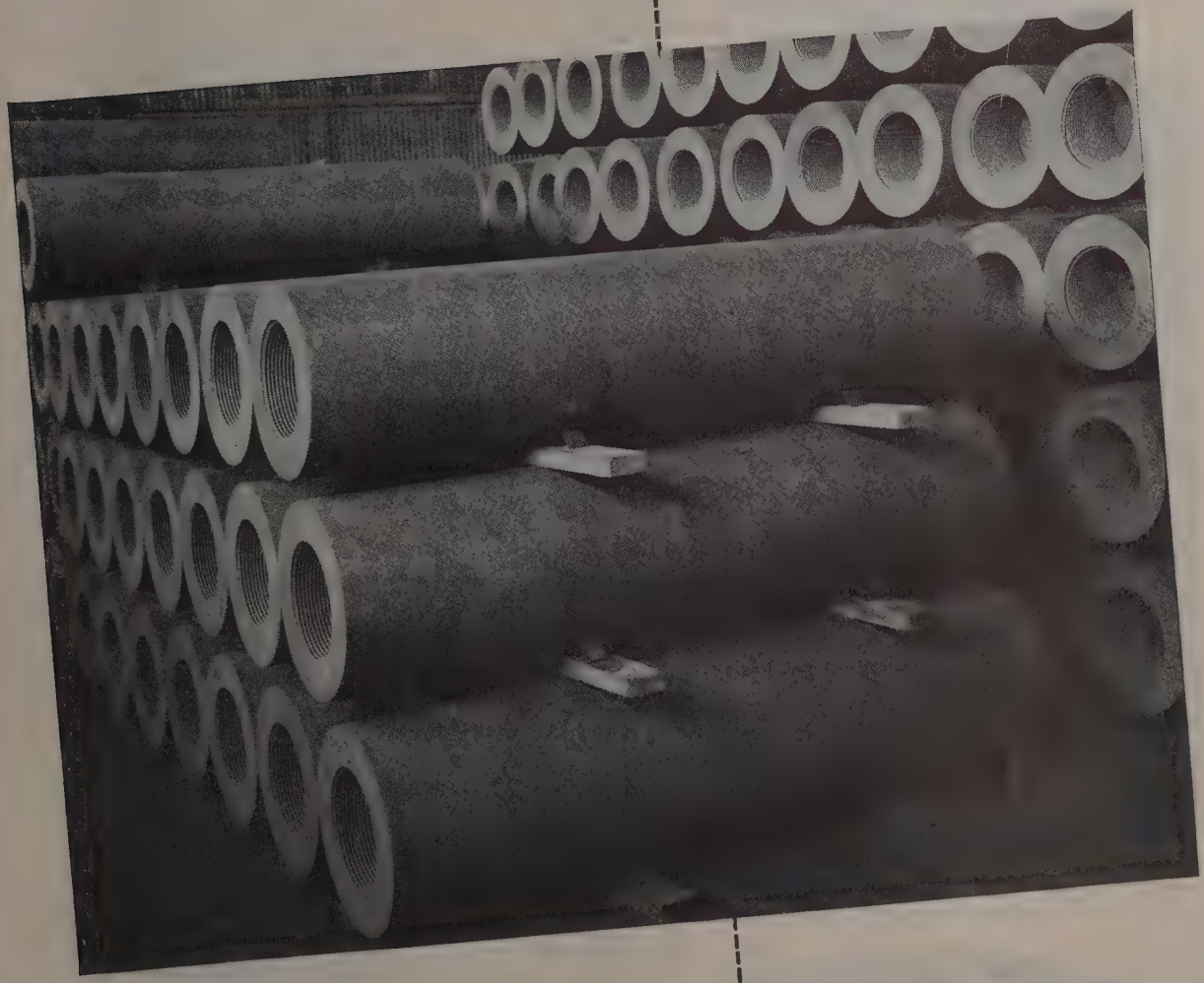
INTERNATIONAL GRAPHITE ELECTRODES

STACK-UP HIGH

TO KEEP PRODUCTION COSTS LOW

Superior performance of International Graphite Electrodes—high thermal conductivity . . . high current capacity . . . high resistance to oxidation . . . high degree of purity—assures lower cost per ton of production. All International Electrodes fully measure up to every important standard by which acceptable electrodes are judged.

Write for International's Engineering Data Book which contains valuable electrode engineering information.



International Graphite & Electrode Corp.

ST. MARYS, PA.

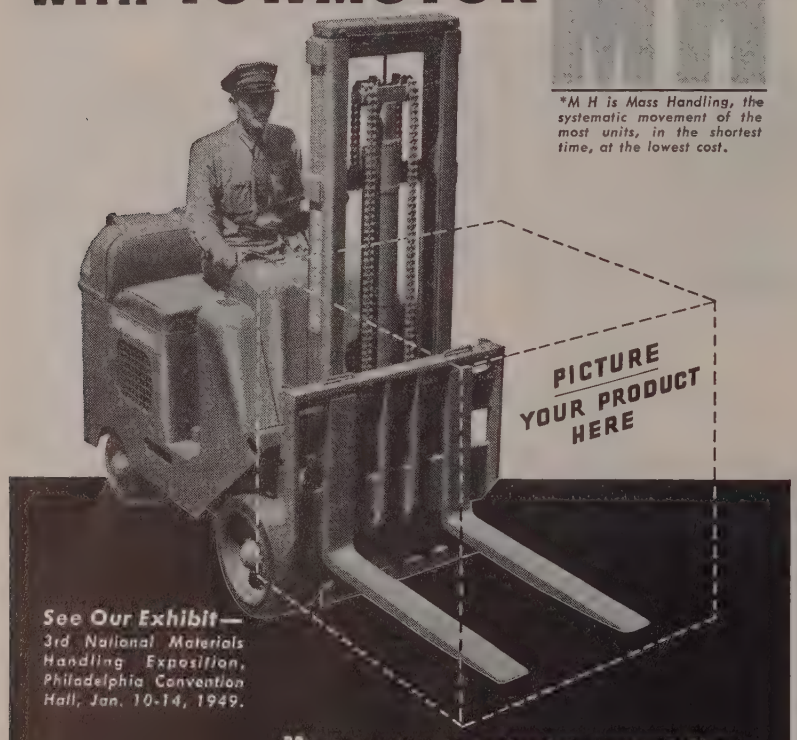
4572

Is HANDLING Holding Down Production?

INCREASE PRODUCTIVE OUTPUT WITH TOWMOTOR

M H *

*M H is Mass Handling, the systematic movement of the most units, in the shortest time, at the lowest cost.



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3rd National Materials Handling Exposition, Philadelphia Convention Hall, Jan. 10-14, 1949.

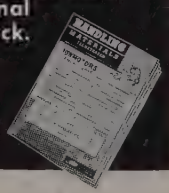
Missing out on production quotas? Then check up on your handling operations . . . chances are you need Towmotor Mass Handling to help you get the most from modern production machinery and skilled production workers. Towmotor handling is modern handling at its best. It keeps production lines humming, pares time and labor costs, puts overhead storage space to work.

Towmotor Fork Lift Trucks, Tractors and Accessories are designed for fast, safe handling of materials and products of every type, size and shape. Gasoline-powered to stay on the job twenty-four hours a day, every day . . . available in models and capacities to meet the needs of every plant in every industry. Towmotor is the answer to your handling problem.

The cost of Towmotor operation? The men who make handling pay a profit have the answer: More professional handlers use Towmotor than any other fork lift truck.

FREE HANDLING INFORMATION

HANDLING MATERIALS ILLUSTRATED, containing helpful information on handling operations in every type of industry, will be mailed regularly to you, without cost or obligation. Write today for your FREE copy of the current issue.



TOWMOTOR CORPORATION, Division 16, 1226 East 152nd St., Cleveland 10, Ohio
Representatives in All Principal Cities in U. S. and Canada

FORK LIFT TRUCKS *and* **TRACTORS**

RECEIVING • PROCESSING • STORAGE • DISTRIBUTION

less sheets for shipment in four weeks and stainless strip, within twelve weeks.

Most sellers of carbon sheets have taken no action beyond February in establishing quotas for non-certified consumers. However, one leading independent this week opened books for March and similar action is contemplated in other quarters.

Boston — Large segment of finished capacity is not scheduled beyond February and in effect only 60 days' tonnage is definitely established on mill books. This is an unusual situation and under ordinary circumstances such timing might be too close; in any event, close co-ordination between consumers, district sales organizations and producing executives is necessary for this kind of scheduling. Considerable March capacity for which semifinished must be processed in February is still open. There is little fictitious or speculative tonnage included, which in part probably reflects the small volume affected by deferments despite a slowing among some flat-rolled consumers. Pressure for steel is easing, notably for gray market and premium price tonnage. For first time in the postwar period more buyers of steel show concern as to price, and in this district there are few conversion deals.

Pittsburgh—First indication of lessening in steel requirements for some consumer goods lines is reflected in a reported softening of prices for sheets and strip obtained via the complicated conversion routes. Integrated mills' district sales offices are closely watching their customers' production schedules in an effort to prevent continued shipment of monthly allotments in those instances where consumption has been reduced. Mills are keenly conscious of the possibility that some of their steel could readily be diverted into the gray market. Producers are hopeful of clearing up the yearend carry-over tonnage during January. First-quarter schedules have been established, although subject to change pending clarification of the status of the voluntary allocation programs.

Cleveland — Overall demand for steel continues far in excess of supply, and one producer has received new inquiries for conversion ingots. While some consumers, notably washer and ironer manufacturers, have cut back production any resultant reduction in their demand for steel has affected only conversion ingots. Those consumers still remain on the order books for mill supplies of finished steel.

Although some producers of stainless steel have reduced extras on stainless steel, Republic Steel Corp. had made no revision by late last week.

Republic's Cleveland 98-inch hot strip and sheet mill which has been out of operation several weeks because of a breakdown of a broadside stand was expected to be running soon. The broadside stand had been repaired and was being given test runs last week.

Chicago — Two premium steel sources—the gray market and conversion—are now feeling an easing in overall demand, although the complete dissolution of these types of activity is far from accomplished. In one sense, the gray market is more

One of a series *of messages to help you increase your understanding of business paper advertising, and its effect on your job.*

Advertising is your boy!

SOME COMPANIES think nothing of investing hundreds of thousands of dollars in new machinery, in order to trim a few cents off their manufacturing cost per unit. Yet these same companies often waste such savings in costly selling methods — by expecting their *salesmen* to beat the brush for new prospects.

That's not what salesmen are for. Their time is too valuable. And it just isn't good business to send a *man* to do a boy's work. Not when you can use advertising as your "boy" — to do the same job faster, more efficiently, and a whole lot cheaper! For instance —

It costs about $10,000 a year, on the average, to put one good salesman into the field. Assuming that he can make about 750 calls a year, you get an average cost of something over $13 per call. That's not too high if your salesman can concentrate on *actual prospects*. But it's entirely too much to spend on "missionary calls" — especially when you consider that for the same $13 (and usually much less) advertising can make well over a *thousand* such calls on the readers of magazines like this!

Did we say *boy?* Actually, advertising works more like a machine. For by mechanizing part of the selling process, it reduces your cost of *manufacturing a sale.* Just consider the five basic steps required:

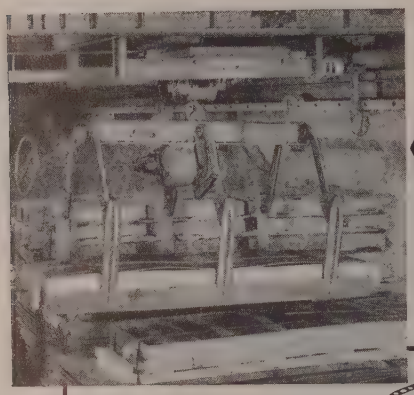
1. **Seeking out prospects**
2. **Arousing their interest**
3. **Creating a preference for your product**
4. **Making a specific proposal**
5. **Closing the order**

Advertising performs the first three of these steps. It leaves your salesmen free to concentrate on the last two — which they alone can do, and do best.

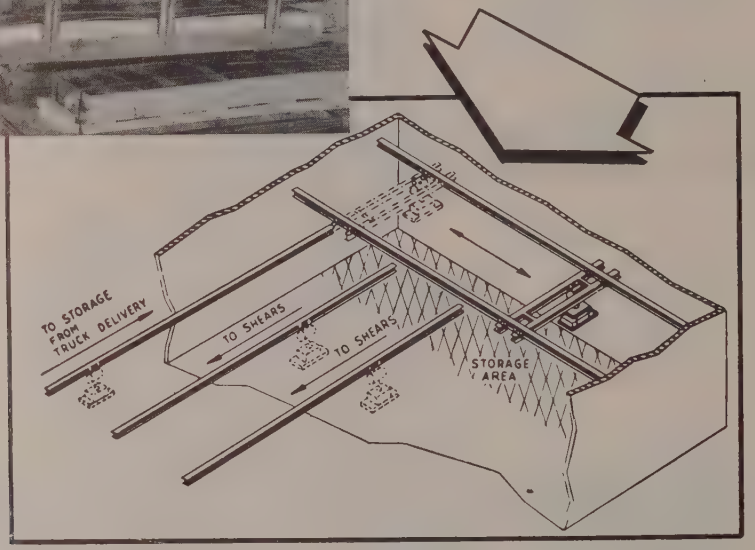
Nothing you invest in will go so far toward reducing your cost of manufacturing a sale. And nowhere will this investment yield a higher return than in the business press, where your advertising calls on the greatest possible number of interested prospects, at the lowest possible cost.

STEEL

is a member of The Associated Business Papers who are sponsoring this campaign. If you'd like reprints of this advertisement (or the entire series) to pass along to others in your organization, we'll be glad to mail them to you, together with a copy of an interesting folder entitled, "How Much Does NO Advertising Cost."



ONE R & M HOIST
DOES ALL THIS!



Used with traveling bridge it unloads delivery trucks; carries standard 5-ton bundles to storage, moves sheets to shears. One operator handles this efficient, money-saving system.

SAVES UP TO $8 A TON ON STEEL

This capacity hoist permits purchase of steel in 5-ton bundles, and saves the 7½c to 40c per hundred weight premium charged for purchases in less than bundle lots. The speed of unloading lets you get trucks away from the dock faster . . . cuts demurrage charges. Faster unloading releases man power for other purposes. These savings will pay the cost of the hoist in a hurry.

There is a size and type R & M hoist for every lifting purpose. So, "Take it UP with R & M." WRITE FOR DETAILS, explaining briefly your lifting needs.

Reduce Your Costs

VISIT OUR EXHIBIT
BOOTH NO. 133
NATIONAL MATERIALS HANDLING SHOW
PHILADELPHIA--JAN. 10-14, 1949

ROBBINS & MYERS, INC.
HOIST & CRANE DIVISION
SPRINGFIELD 92, OHIO • BRANTFORD, ONTARIO
MOTORS • FANS • MOYNO PUMPS • FOUNDED 1878

active than it has been for several months—strong competition for the available business having set in, with greater sales efforts and price reductions evident. Furthermore, possibility exists that more steel can find its way into irregular channels in the near future as the result of growing inventory consciousness on the part of some manufacturers. Several prominent manufacturers are reportedly striving for a better balance of inventory and are releasing some tonnage. The imbalance in inventories, however, is generally in products other than flat-rolled. In the conversion picture, a few holes in rolling schedules seem to be appearing as scattered firms drop out. This freed capacity, however, is promptly filled by other companies. Steel men are acutely cognizant of the straws in the wind, even though the howls for more steel seem as loud as ever. Without exception they contend that a lessening in pressure from some companies, now planning production cutbacks in the new year, will be nullified by those other companies which have been unable to increase production.

Cincinnati—Priority tonnages, including those for the military, are cutting more and more into sheet mill schedules. First quarter quotas, for those not receiving voluntary allocations, were reduced with hope of shrinking the carryover volume but this objective may again be elusive. In this quarter the same aim was advanced, but the carry-over resembles those earlier in the year.

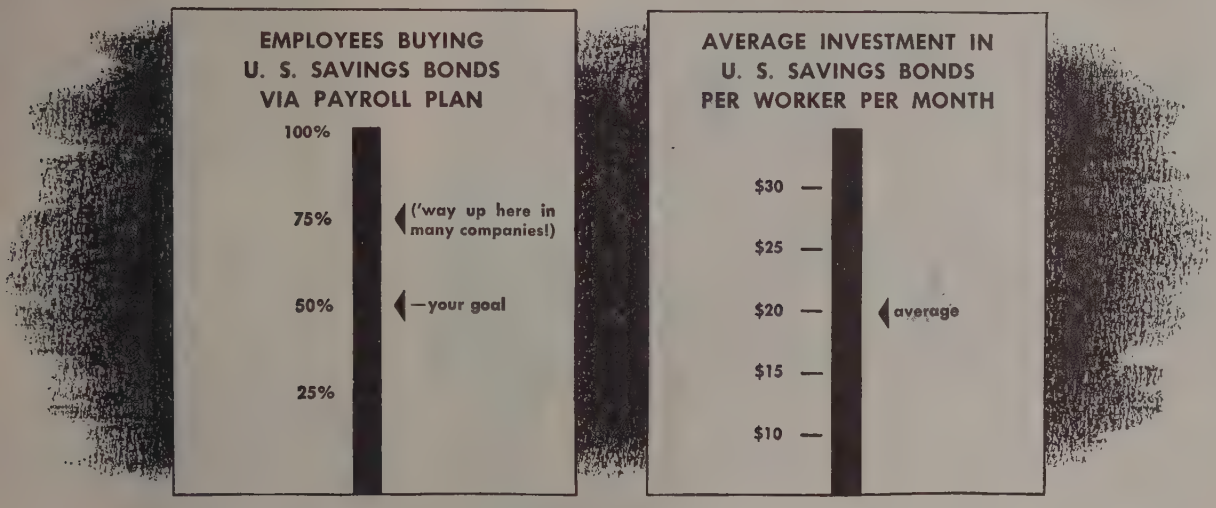
Inquiry is heavier at Wright-Patterson Air Force Base, Dayton, O. One inquiry is for 1015 tons of alloy sheets with bids closing Dec. 29; another is for 652 tons of chrome molybdenum steel and 363 tons of chrome nickel steel sheets, due Dec. 23.

Middletown, O.—Armco Steel Corp. is using a new card of extras, effective as of Dec. 20, for gage, width and pickling of heavy hot-rolled sheet and hot-rolled strip, it was announced by J. A. Ingwersen, vice president in charge of distribution. Revisions also are made in gage and width extras on cold-rolled sheets in 17 gage and heavier and on enameling iron, 15 gage and heavier.

There is no change in price bases for these or other products and the adjustments made were established to correct inequities which existed in the price structure of the items involved.

St. Louis—Sheetmakers in this district are finding themselves the nearest to current on orders at the year-end since the war. There will be moderate carry-over, which will be cleaned up almost certainly by the end of the first quarter. Granite City Steel Co., for example, is making sure of that by allocating only two months production for the first quarter, thus allowing one-third of its output for backlog cleanups and possible increases in government orders. As the year ends, there is noticeably less "excitement" among sheet customers; that is, less frantic clamor for steel, although no letup in demand. Steelmakers see in the abating hysteria a portent of easing demand next year. In this district, one no longer hears of a steel black market and conversion deals are on the way out.

How is YOUR company doing in this "EVERYBODY-BENEFITS" plan?



Compare your employee participation with others who have Payroll Savings

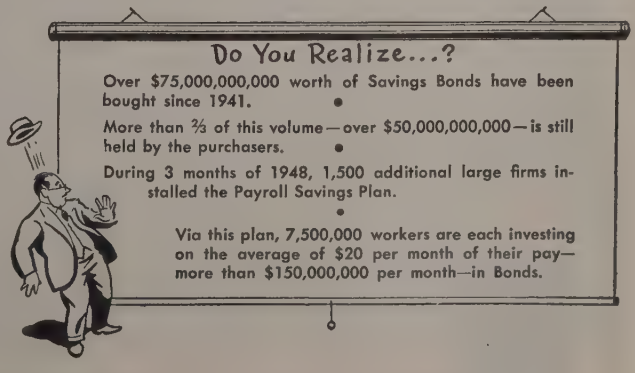
If the figures for your company fall below those shown above, you're missing your share of benefits of the Payroll Savings Plan! These benefits are described below. Nation-wide experience proves that when top management puts the "OK" on the Plan, its benefits rise sharply.

BENEFITS TO *EMPLOYEES:* Every $3 invested in Savings Bonds pay $4 at maturity. Workers gain a 33⅓% return on their money—enabling them in the future to buy more of the things they will want—plus the peace of mind that goes with regular saving.

BENEFITS TO *EMPLOYERS:* The feeling of security that goes with participation in Payroll Savings makes workers more contented. Worrying less, they work better. Among the more than 20,000 large companies with Payroll Savings, records show that—following installation of the Plan—production increased, absenteeism and accidents decreased!

BENEFITS TO THE *NATION:* The Payroll Savings Plan is a powerful deterrent to inflationary forces. Every Savings Bond dollar built up in the Treasury withdraws a dollar from the swollen spending stream. The Plan thus contributes to national security—which affects *your* security!

WHAT CAN *YOU* DO? If your company has the Payroll Savings Plan, make sure it's being adequately promoted—backed by your top executives—to bring your company its full measure of benefits. If you haven't yet installed the Plan, why pass up its benefits any longer? All the help you need is available from your State Director, Savings Bonds Division, U. S. Treasury Department. He is listed in your telephone book. Call him now!


Do You Realize...?
Over $75,000,000,000 worth of Savings Bonds have been bought since 1941.
More than ⅔ of this volume—over $50,000,000,000—is still held by the purchasers.
During 3 months of 1948, 1,500 additional large firms installed the Payroll Savings Plan.
Via this plan, 7,500,000 workers are each investing on the average of $20 per month of their pay—more than $150,000,000 per month—in Bonds.

The Treasury Department acknowledges with appreciation the publication of this message by

STEEL

This is an official U. S. Treasury advertisement prepared under the auspices of the Treasury Department and the Advertising Council.

UP goes material-handling efficiency

when you use Battery Industrial Trucks

Greater efficiency in material handling means greater earning power in any plant. Start paring unnecessary moves for production hands or warehouse men and you not only reduce handling cost per unit, but make way for volume never before possible.

Battery industrial trucks are the dependable, economic means of obtaining such efficiency. They can perform their strenuous tasks 24 hours a day every day if required, and their power characteristics are outstanding: instant starting; quiet operation; no fumes; no power used during stops. Driven by electric motors, they have a minimum of wearing parts and are inherently trouble-free.

Keeping these hard-working trucks on the job calls for EDISON Nickel-Iron-Alkaline Batteries. Built of rugged steel, yet precise as a watch, they are recognized for dependability, long life and trouble-free operation. Specify EDISON and you specify maximum reliability—enduring quality.

ADVANTAGES OF EDISON NICKEL-IRON-ALKALINE BATTERIES: They're mechanically durable; electrically foolproof; quickly and easily charged; simple to maintain; not injured by standing idle.

EDISON

Nickel • Iron • Alkaline

STORAGE BATTERIES

EDISON STORAGE BATTERY DIVISION

of Thomas A. Edison, Incorporated, West Orange, N. J.

In Canada: International Equipment Co., Ltd., Montreal and Toronto

Stainless Steel . . .

Revisions in extras average 5 per cent on entire stainless steel production

Tool Steel Prices, Page 101

Cleveland — Carnegie-Illinois Steel Corp. and American Steel & Wire Co., subsidiaries of United States Steel Corp. have jointly announced reductions in the extras for several of their stainless steel products. The amount of the reduction differs product by product, but the average reduction on the entire stainless steel production of these two companies is approximately 5 per cent.

It was announced that these reductions, particularly those affecting quantity extras, are being made in order to maintain the competitive position of these two United States Steel subsidiaries and to extend the use of stainless steel.

Among Carnegie-Illinois stainless steel products affected are plates, sheets, hot and cold-finished bars, structural shapes, hot and cold-rolled strip, and forging billets. Stainless steel products manufactured by the American Steel & Wire Co. include cold-rolled strip, cold-finished bars, and wire.

The new extras are effective as of Dec. 20, 1948.

Pittsburgh—Reductions in stainless steel product extras, announced last week by Carnegie-Illinois Steel Corp. and American Steel & Wire Co., were adopted to maintain their competitive position. It will be recalled that Carnegie-Illinois reduced its base prices on the 300 and 400 series forging billets last fall for the same reason.

The only base quotation adjustment in the latest price action involves a reduction of 1 cent to a base of 51 cents per pound for cold-rolled strip, type 309. The new schedule also notes that when carbon contents of 0.11 per cent or under is specified or required for types 301, 302 and 302B, price of type 304 applies.

Revision in Carnegie-Illinois's extras follow: Gage extras for sheets now apply to all finishes and are reduced 1 cent per pound for gages 21 and 22; 2 cents for 23 to 26 gage inclusive. In line with this action there no longer is a combined gage and polishing extra for No. 4 finish sheets.

The new set-up lists polishing extras only for No. 4 finish, one side, with adjustments from 1 to 20 cents per pound from the former combination gage and polishing extras. Polishing extras for Nos. 6 and 7 finishes, one side, and Nos. 4, 5 and 7 finishes, both sides, are available on applications.

Quantity extras have been revised downward 1.75 cents to 5.75 cents per pound for quantity brackets under 8000 pounds on all products and quantity ranges for under 5000 to 3000 pounds, and under 3000 to 2000 pounds, inclusive, are combined. These new quantity extras are: Under 8000 to 5000 pounds, 2.25 cents; under 5000 to 2000, 3.25 cents; under 2000 to 1000, 5.50 cents; under 1000 to 500, 8 cents; under 500 to 300, 10.75 cents; under 300 to 100, 14

cents; and under 100 pounds, 20 cents.

Packing extras for sheets have been augmented to include a charge of 75 cents per pound for boarded platform packing, 5000 pounds or more per package. Cold-rolled strip packing extras have been reduced as follows: Boxing, from 1.50 to 1.25 cents per pound; skid or platform packing, from 1 cent to 0.50 cent.

Size and finish extras for stainless plates no longer list extras for hot-rolled annealed or heat-treated and pickled and cold rolled.

Hot-rolled strip in coils, width and gage extras were formerly listed for widths 3 to 24 inches, exclusive, but now these extras are applicable for width ranges down to ½-inch, inclusive, as follows for thickness 0.095-inch and heavier: Widths under 1 to ½-inch, inclusive, 1.50 cents; under 3 to 1-inch, 0.75 cent; 3 to 18 inches, inclusive, no charge; over 18 to 24 inches, exclusive, 1.75 cents per pound.

Armco Steel Corp. adopted similar extra changes for its stainless products, effective as of Dec. 22, and went one step further in establishing for distributors a 5 per cent discount applicable on shipments either for stock or direct shipment to customers. The former practice was to allow a discount of 7.50 per cent to distributors on shipments direct to customers with no allowance permitted on shipments for stock. Armco also has established combined standard width and length extras on sheets for shipment to warehouse docks only, applicable for only a specific gage and grade. This action is expected to give distributors more opportunity to combine orders for purchase of larger quantities. Another major producer has established a 5 per cent discount for shipment to jobbers' stocks.

Tin Plate . . .

Tin Plate Prices, Page 101

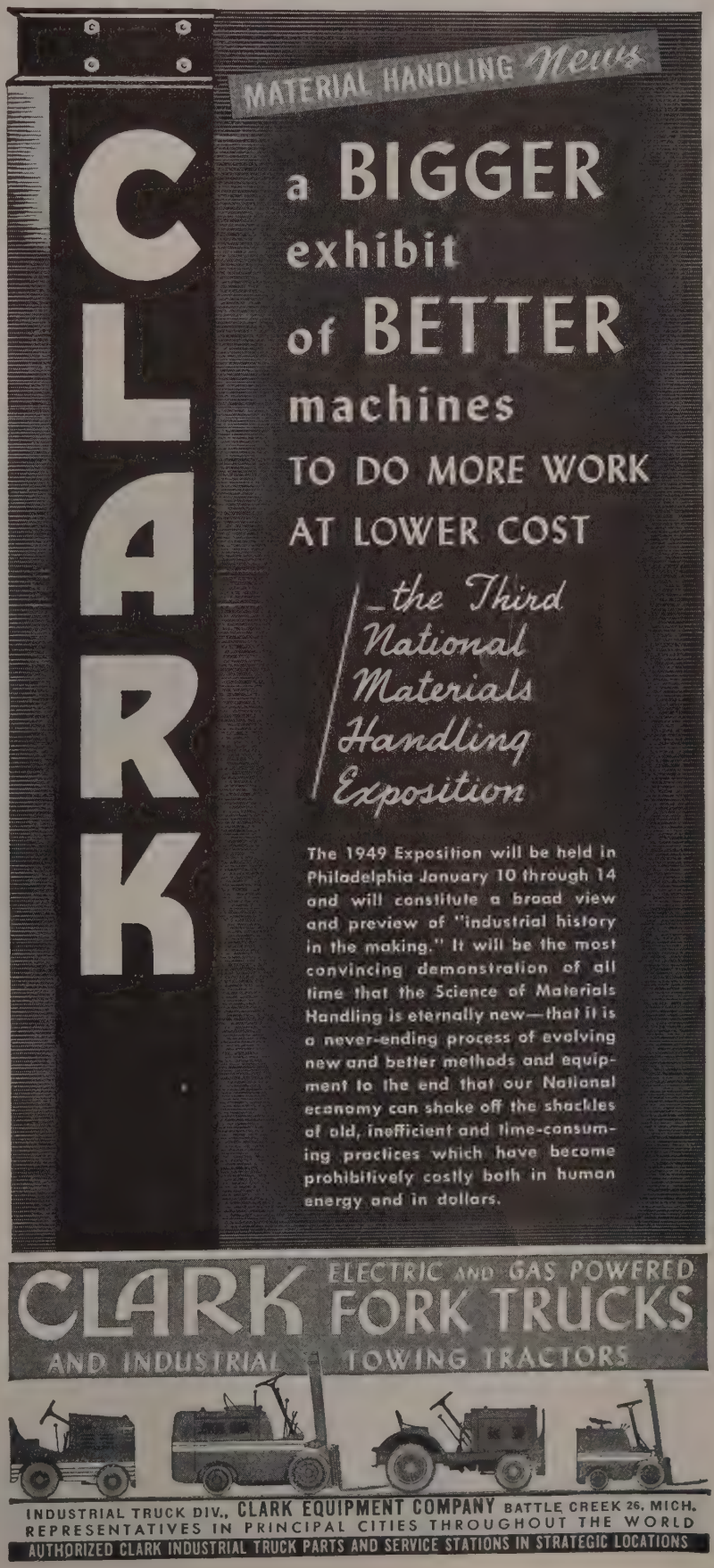
Pittsburgh—Jones & Laughlin Steel Corp. and Wheeling Steel Co. have announced tin mill product price schedules for 1949 similar to those initiated by Carnegie-Illinois Steel Corp. First quarter specifications for tin plate items indicate little change in pattern of demand. Output is expected to be well sustained here, although some reduction is indicated for the Chicago district. Construction of a one-story, 700,000 square foot steel frame building is expected to be started next spring by Continental Can Co. near the Irvin Works of Carnegie-Illinois for the manufacture of metal cans and crown caps.

St. Louis — Complete schedule of Granite City Steel Co.'s price increases on tin mill products is as follows: Hot-dipped tin plate, $7.95 per base box of 100 pounds, 1.50-lb coated, up 95 cents; $7.70 per base box of 100 pounds, 1.25-lb coated, up 90 cents.

Holloware enameling black plate, 29 to 31 gage, $5.50, up 55 cents.

Electrolytic tin plate, 0.75 lb, $7.20, up 80 cents; 0.25-lb, $6.65, up 65 cents; 0.50-lb, $6.90, up 70 cents.

Canmaking quality black plate, $5.95: Per 55 to 70 lb base box weight, up 55 cents; per 75 to 95 lb, up 65 cents; per 100 lb up 65 cents;


CLARK
MATERIAL HANDLING News
a BIGGER exhibit of BETTER machines TO DO MORE WORK AT LOWER COST
—the Third National Materials Handling Exposition
The 1949 Exposition will be held in Philadelphia January 10 through 14 and will constitute a broad view and preview of "industrial history in the making." It will be the most convincing demonstration of all time that the Science of Materials Handling is eternally new—that it is a never-ending process of evolving new and better methods and equipment to the end that our National economy can shake off the shackles of old, inefficient and time-consuming practices which have become prohibitively costly both in human energy and in dollars.
CLARK ELECTRIC AND GAS POWERED FORK TRUCKS AND INDUSTRIAL TOWING TRACTORS
INDUSTRIAL TRUCK DIV., CLARK EQUIPMENT COMPANY BATTLE CREEK 26, MICH.
REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD
AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

Box car builder saves $2925 a day —CAN YOU?

General Electric's money-saving pack of facts: *manual—film—review booklets.*

Get these facts to your key men and see how much you can save

- **WITH RESISTANCE WELDING, a box car builder cut costs by $2925.**
- **WITH RESISTANCE WELDING, a small transformer manufacturer saved $84,000 per year.**
- **WITH RESISTANCE WELDING, a radio tube maker stepped production up to an *unprecedented* 2,500 per day.**

In your plant, too, savings and production feats like these are possible—when your key personnel *know* the up-to-the-minute facts on resistance welding—*know* how to put them to work on your problems. And it's so easy to get the facts to them *now*—at no cost.

***FREE* to business management**

Examine the General Electric *Resistance Welding Manual* free of charge. It covers every phase of resistance welding from a glossary of welding terms to specific industrial applications in plants like yours. It tells *where* resistance welding can be used—*how* it can be used—exactly *what* benefits you can expect from it. It's written by experts, *without sales bias*, in a language your men can easily understand. Look through it. Satisfy yourself that it will pay off.

Get a *FREE* showing of the film

Your key personnel will get a kick learning the newest facts about resistance welding in this modern, absorbing, *visual* way. Here's a General Electric sound film in full color that wallops across its ideas — actually *shows* you how resistance welding is building better products for less in plants like yours. It's prepared by resistance-welding specialists in terms that are grasped readily. Show it to your key men.

ACT NOW! Don't delay. Remember — resistance welding saves you money in *five* ways—and does a better job, too. So start the ball rolling by filling in the coupon below and we'll rush you a copy of the G-E *Resistance Welding Manual. And,* with it, we'll tell you how to arrange for a free showing of the film.

FREE TO BUSINESS MANAGEMENT

Attach to your business letterhead

General Electric Co.
Section M 684-10
Schenectady 5, N. Y.

Please send me a sample copy of the G-E *Resistance Welding Manual* without cost or obligation, with details on how I can arrange for a FREE SHOWING of the film. (Extra copies at regular manual price—$1.00.)

Name_____ Title _____

Company_____

Street_____

City_____

GENERAL ELECTRIC

per 100 to 128 lb up 55 cents.

Chicago — Inland Steel Co. last week announced new tin mill product prices, effective Jan. 1, identical with those put into effect recently by other leading producers. Affected are the following products: 1.50 lb and 1.25 lb hot-dipped coke tin plate; No. 25, No. 50, and No. 75 electrolytic tin plate; special coated manufacturing ternes; and can-making quality black plate. All prices are f.o.b. works, Indiana Harbor, Ind.

Steel Bars . . .

Bar Prices, Page 100

New York—Some leading hot carbon bar sellers, which up until now have taken no action beyond February, are setting up March quotas for non-certified consumers. Also, one large producer of cold-drawn carbon bars and hot and cold alloy bars has begun entering orders on a more or less selected basis for second quarter. Most cold drawers, however, have been entering orders for second quarter and even beyond in a few instances for some time, although also on a selective basis.

In general, hot carbon bar quotas for non-priority customers will be less than in the quarter now ending. Most producers believe that while some spottiness may develop in the end-use of carbon bars, there will be an excess of demand over supply.

Boston — Scattered deferments with consequent mild easing in pressure for carbon and alloy bars give an uneven outlook; overall consumer buying is less feverish, notably in cold finished, but government requirements are higher. Alloy buying includes rifle barrel blanks for Springfield arsenal and bars for die-link forged chain, Boston Navy yard. Alloy bar inquiry for general manufacturing requirements is off more than that for carbon bars. Screw machine needs are holding well. Trend with forge shops is more spotty; those producing for aircraft and automotive plants are active, but small tool shops are slower. Textile machinery builders are generally maintaining specifications. Demand for hot-rolled from cold finishing shops holds at high level and it is difficult to attach any slowing down among larger consumers.

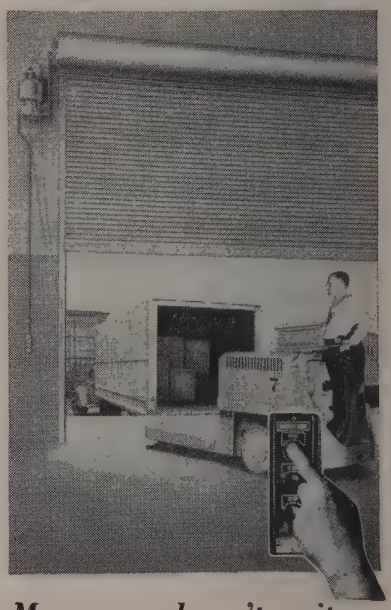
Philadelphia — While adversely affected by yearend conditions, carbon bar demand remains fundamentally strong, with most non-certified consumers expecting less tonnage to be available in the first quarter than at present. In some instances actual requirements may be less, but there will still be an overall shortage, it is believed.

Chicago—Although carryover tonnage into next year will be heavy, there are indications that a fewer number of companies will press for greater tonnage. Three bar consumers, in scattered industries, have asked that January deliveries against one company's quotas be deferred for a month. Presumably their action stems from unbalanced inventories rather than from reduced needs. Another mill reports, however, that when it set its March quotas a short time ago all tonnage was immediately taken.

Wright-Patterson Air Force, Dayton, O., is inquiring for 210 tons of mild steel carbon bars, mostly flats.

When Manpower *Waits . . .*

Losses pile up every time manpower is forced to lose productive minutes waiting for *doors* to be opened . . . standing by while traffic passes through . . . taking time to close them. You can easily stop these hidden profit leaks.



Manpower doesn't wait
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Structural Awards Decline

New York — Structural awards of 138,343 tons in November were down from the preceding month although they showed an increase of four per cent over November, 1947, according to the American Institute of Steel Construction. Estimated total bookings for the first 11 months were 1,792,784 tons, an increase of 21 per cent over the same period of 1947.

November shipments were 164,850 tons, slightly over October's total, and brought the total for the first 11 months up to 1,804,701 tons. Backlogs for the next four months only amount to 672,550 tons as of Nov. 1.

Structural Shapes . . .

Structural Shape Prices, Page 101

Boston — Unit bids, superstructure, Housatonic bridge, Shelton-Derby, Conn., are at peak postwar levels for fabricated structural steel required for this class of work. American Bridge Co., low on the contract, quoted 19.04c per pound on 2550 tons, truss spans or $971,040; for riveted girder spans, alternate one, 1875 tons, 16.39c per pound, or $614,625, and 19.00c pound on welded girder spans, 1655 tons, alternate two, or $609,000. Lowest alternate bid, covering welded girder spans, was $1,728,354.40. Bethlehem Steel Co., other bidder, quoted on riveted girder spans only, with a total of $1,801,988.34. Other lowest unit for material: Open grid steel floor, 4492 square feet, $4.70; copper gutters and leaders, 20 oz., $2.30 (Bethlehem), 2563 pounds; metal bridge rail 4432 linear feet, $18.11; electrical pipe conduit, two-inch, 2780 linear feet, $2.20; downspouts, four-inch standard steel pipe, 1400 linear feet, $7.27.

Philadelphia — One plate fabricator, relying for a long time on a high premium mill producer, recently decided that it can no longer carry the extra price load and is trying desperately to establish other connections, but with little success.

Specifications for various sections of the Delaware River Memorial bridge, near Wilmington, involving approximately 40,000 tons, were issued last week by the Delaware State Highway Department, Dover. Bids will be closed Jan. 25. Another large project in this district, a 16,000-ton bridge over the Schuylkill river for the state highway department, will come up for figuring early this spring. With work of this character pending and in prospect, public construction continues to dominate the local structural market. Actual awards over the past week have been extremely light.

Chicago—While a few individual shape producers report a decline in order backlogs, possibly 10 per cent in some cases, firm business with them extends completely through next year and beyond. Little concern, therefore, is shown over the apparently seasonal slackening in new business which has developed recently. As in past weeks, outstanding awards, tonnagewise, are for government and public utility projects, with some hesitancy apparent among industrial concerns over the wiseness of undertaking expansions of plants or construction of new facilities at the moment. For this reason, it is reported, a multi-million dollar refinery project has been abandoned despite an enormous expenditure thus far for equipment.

Seattle — Fabricators report a seasonal decline in inquiry for small tonnages but some plants are not in position to take larger contracts because of the critical supply situation. Wide flange shapes are extremely scarce while shortage of sheets, pipe and other materials is an added handicap in estimating. Delayed water shipments are arriving and future consignments of heavy materials will be routed by steamer, as the difference in freight is a considerable item.

Wire . . .

Wire Prices, Page 101

Chicago—Wire demand is showing some spottiness, although not extensively enough to change the overall unbalanced supply-demand ratio. A slackening in bed spring and furniture production has made slightly more wire available to other users, particularly automobile upholstery manufacturers, but apparently for every company which is holding up on steel orders there are two ready to step into the breach and take any tonnage thus made available. Farm demand is expected to ease somewhat during the winter months. Those wire items unaffected by advent of bad weather are in short supply.

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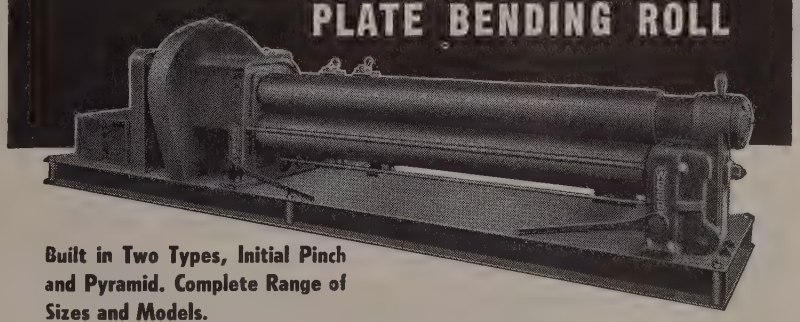

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GENERAL ELECTRIC

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 100

Boston — Delays in procurement of reinforcing steel through contractors prompt direct buying on part of some public works departments; Connecticut has estimates on 408.532 square yards, approximately 1275 tons, 10-foot sheet length steel mat reinforcement on which Truscon Steel Co. is low at 37.50c per square or $153,199.50. An alternate on slightly less tonnage, 13-foot lengths, brought a bid from American Steel & Wire Co. for one-half the quantity at 29.52c per square. For construction and engineering projects, shortage of concrete bars is frequent; allocations to distributors are not sufficient to cover new requirements in full and contractors are forced to shop for tonnage.

Chicago — Reinforcing bar men find it difficult to estimate size of order backlogs, pending nature of several large jobs with extended deliveries would be sufficient to change the picture, if the jobs were let. However, one producer says it is completely booked into next August. Despite full books, distress calls for steel to make up for some suppliers' deficiencies meet with consideration, whenever possible. The Ft. Randall dam job in South Dakota, bids for which were taken ten days ago, has reportedly been let in part to two contractors, one in Davenport, Iowa, the other in New York, although Sec. A. of the job, requiring approximately 9000 tons of bars, will be rebid later.

Plates . . .

Plate Prices, Page 101

Boston — As in other steel products, base prices on plates mean less in the total element of cost than formerly; premiums, extras, freight charges, now paid by the buyer, and selective selling of tonnage left over from certified programs, enter into costs increasingly. Steel consumers indicate growing reluctance in the matter of premiums, but in plates many are unable to dodge if they are to get material. Pressure on mills selling 3.40c and 3.45c, f.o.b., is especially strong and on these same mills certified tonnage load is heavy. By second quarter, if not already, certified program requirements for plates will be heavier than for any steel products and this accounts primarily for unscheduled March in most cases. Engineering details are not complete for programs taking considerable potential tonnage, resulting in delay in definite specifications.

New York—Except for one or two, plate producers will enter the new year with substantial carryovers. Certain of the larger mills will have arrearages ranging from three to six weeks, with prospects that the non-certified customers will receive substantially less new tonnage in the first quarter than in the current quarter; and, in fact, less overall tonnage, as well as voluntary allocations will take more plates than at present.

Most plate fabricators foresee little let-up in the end-use demand for their products and claim it would take a substantial drop to bring their requirements anywhere near in line with plate supply.

Philadelphia — Plate specifications were off a little last week and may be down even more this week. Nevertheless, there have been few, if any, suspensions and in general the undertone of the market is still strong. Indications point to less "free" tonnage in the first quarter than at present.

Seattle — In view of the increasing shortage of plates, shops have had to restrict operations accordingly. Larger contracts cannot be bid as the supply situation is so uncertain. Mills offer no relief,first quarter allocations being far below normal demands.

Iron Ore . . .

Iron Ore Prices, Page 102

Cleveland — Stocks of iron ore increased to 45,160,225 tons as of Dec. 1 from 43,883,357 tons a month earlier and 43,010,488 tons a year ago, according to the Lake Superior Iron Ore Association. Of the total, 5,689,828 tons were on Lake Erie docks in the United States, 37,528,709 tons at furnaces in the United States and 1,941,688 tons at Canadian furnaces.

Consumption eased slightly in November to 7,016,143 tons from 7.398,-055 tons in October and 7.068,284 tons in November, 1947, making the total for the first 11 months 73,236,-291 tons against 73,735,969 tons for the like period a year ago.

The number of blast furnaces depending principally on Lake Superior ore increased to 195 last month on the addition of Ford Motor Co.'s No. 3 furnace at Dearborn, Mich. As of Dec. 1, 171 furnaces were in operation in the United States with 14 idle, against 172 and 12, respectively, a month ago. In Canada, 8 were in operation and 2 idle as of Dec. 1, against 9 and 1, respectively, on Nov. 1.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 102

Pittsburgh—Beehive foundry coke supply-demand relationship is in closer balance than at any time this year. Many foundries suspended for inventory reasons shipments which had been scheduled for delivery during the last half of this month. It also reflects the substantial reduction in operations at jobbing foundries. Oven foundry coke demand, however, continues active and no easing is noted in requirements for furnace coke. Oven coke continues to move here in relatively large volume from Daingerfield, Tex. Softening in demand for foundry beehive coke has not yet resulted in lower prices.

Tubular Goods . . .

Tubular Goods Prices, Page 101

Seattle—The cast iron pipe market is dull, but renewed interest is expected early in the year. While mills have large backlogs, deliveries of cast iron pipe are improving although other types of pipe have made inroads. Water shipments, delayed 95 days, are arriving.

Pig Iron . . .

Pig Iron Prices, Page 102

New York—A number of foundries closed down prior to Christmas and expect to remain down until Jan. 3 for inventory-taking and other reasons. Still others, however, plan to get in at least four or five days work. Most foundries are arranging to take in pig iron, with few suspensions noted. In certain cases, curtailed demand for castings contributed to decision to close down for a week or more. In the main, district foundries anticipate fairly active operations after the turn of the year, with an improving raw material supply situation, provided weather conditions do not become too bad. Foundries are particularly encouraged over prospect of stepping up in oven coke supply, notwithstanding adverse seasonal influences. One leading eastern Pennsylvania coke producer will resume normal operations Jan. 1 for the first time in a number of months, having completed its repair program by that time. Moreover, coal stocks at the ovens are the best they have been in a long time.

Boston — Users of Mystic pig iron must pay $3.25 a ton more for that brand starting Jan. 1, first quarter price being established at $52.75, f.o.b. Everett for No. 2 foundry with malleable $53.25, furnace. Increase in price is based on November operating costs. This brings Everett iron more in line with outside delivered prices; differential relationship to cast scrap is also narrowed. Pressure for iron continues to ease, larger melters being exceptions, and nearly 40 foundries will be able to weather December without taking in any district production. Most foundries will get tonnage in January with another group off schedule. Basic continues scarce out of New York state; current supply arrangement with the largest supplier expires in May and some users hope for a run on basic by Mystic should demand for foundry continue to slacken.

Boston — With the $3.25 advance at Everett, delivered pig iron prices from that furnace and Buffalo become equalized between Springfield and Worcester. In Bridgeport, Conn., area Buffalo delivered price is now lower. Exclusive of the three per rent federal transportation tax delivered prices, foundry iron, at following points are: Worcester, Buffalo $55.42 and Everett $54.99; Providence, $55.42 and $54.99, respectively; Springfield, $55.01 and $56.26; Bridgeport, $55.42 and $56.18; Boton, $55.42 and $53.25. Slackening in melt is confined almost entirely to smaller shops, heavier consumers operating close to capacity. Demand for iron holds at high level, although supply has improved, and some are increasing ratio of iron in mixtures. Iron is still cheaper than best cast scrap by around $10 ton; some who bought rather heavily of foreign iron late last summer may have overbought in view of improved domestic supply, but return of Mystic to production was uncertain at that time.

Pittsburgh—Jobbing foundries continue to operate on reduced production schedules, with a number of concerns on a three to four-day work week. This reflects the steady decline in order backlogs during recent months. However, merchant iron supply remains tight due to persistent heavy demand from captive foundries producing castings for steel mill and railroad equipment and for maintenance. No improvement in merchant iron supplies is indicated through the first half of next year.

Philadelphia — Foundry melt is appreciably off, due primarily to holiday influences. Some foundries are expected to be down for the entire period between Christmas and New Years. There should be a sharp rebound in operations after the turn of the year, although the average level probably will be down a little from two or three months ago, as castings demand is less pressing.

Buffalo—Foundry operations were on a sharply curtailed basis this week due to extended holidays. With pig iron production holding at 100 per cent of capacity throughout the week, foundries are slated to have better supplies on hand to start 1949. In addition to general foundries observing the holiday period, the East Buffalo car repair shops of the New York Central Railroad will close from Dec. 24 to Jan. 3 for inventory purposes and because of the seasonal lull. The Argonaut Realty Division of General Motors Corp. is offering the Lockport foundry of GM Central Foundry Division for immediate sale with, or without, equipment. The gray iron foundry recently suspended operations because of a letdown in postwar operations.

Cincinnati — Pressure for foundry iron continues even though the melt is lighter than at any time this year.

Warehouse . . .

Warehouse Prices, Page 103

Philadelphia — Year-end influences have caused a lag in warehouse trading with a result that December business probably will be the lightest in several months. Various buyers are down at least partially for inventory taking and are planning to take in little tonnage until after the turn of the year. In a few instances, there are indications that requirements may continue on a more restricted scale for the time being, due to a slackening in end-use demand. However, these are the exception rather than the rule and, all in all, jobbers anticipate a good first quarter business.

With the Christmas and New Year holidays falling on Saturday this year, eastern plate producers believe that by making some minor adjustments in schedules there will be no important disruptions of their finishing operations. As for open-hearth production, however, most producers expect a drop in the weekly production of about 15 per cent. This was anticipated as the period drew to a close last week and it is believed it will also be true this week.

Boston — While in part due to yearend influences, warehouse volume has slackened; there is, however, a decline in large tonnage buying because of price. Consumers are maintaining for most part orders for three to five tons, but placing less carlot volume. Revised lower allocations keep warehouse inventories low on most active carbon products, notably

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GENERAL ELECTRIC

structurals, plates and flat-rolled. Few distributors have any definite idea what they may expect on carbon products in March, while January and February quotas are generally smaller. Cold-finished bar stocks and some alloys are getting into better balance. Stainless is easier to obtain in some directions, but prices are mixed; matter of discount allowance is paramount with warehouses with some shifts in supply sources.

Seattle — Wholesale jobbers report the usual seasonal drop in demand but anticipate this will disappear early next month as buying of all out-of-stock items has been sustained until recently. The supply situation continues unsatisfactory, complaint being heard that mills are concentrating on certain items and favoring buyers closer to point of origin. Plates have replaced black sheets as the most critical item. Alloys have tightened somewhat, but fair stocks are reported.

Scrap . . .

Scrap Prices, Page 106

Pittsburgh — New scrap commitments have been on a selective basis in recent weeks and have been limited to relatively small tonnages. Many foundries have withdrawn from the market and, as in the case of integrated steel producers, they likely will not re-enter the market for large new tonnage commitments until after the close of the year. Scrap shipments under old contracts are well sustained for this period of the year. This latter factor, if maintained, could well have an important bearing on the near-term price trend. However, few trade authorities are willing to predict to what extent, if any, lower scrap prices will prevail early next year. Railroad specialties have held at steady levels on recent awards; the New York Central list was awarded at $56.61 for springs and $56 to $57.12 for wheels.

New York — While the situation is now improving, heavy snows retarded the movement of scrap in this district over the past week. Brokers buying prices are unchanged, although the undertone in cast grades continues easy.

Boston — Buying is slow with bulk of steel scrap selling at $34.40, shipping point, premiums having all but disappeared. Movement of cast is also sluggish, although prices are holding well. Yard reserves of cast are generally small. Cast is still up to $10 per ton higher than pig iron despite the recent $3.25 advance by the district furnace.

Philadelphia — Steel scrap prices are firm, with heavy snows in certain sections of the East imparting strength. However, weakness still prevails in major cast grades, with the likelihood of a further decline soon in cupola cast and the charging box and heavy breakable grades.

Cleveland — Scrap buying in the open market had practically ceased here last week. Prices of open-hearth and blast furnace grades remained at the formulas that have been in effect for some time, but there was increasing belief they might decline before buying is resumed. The cast iron market was easy, with quotations down $2 to $5 a ton, making No. 1 cupola $71 to $72.

One steel company which is out of the open market for scrap expects to remain out until after the first of the year. With its scrap inventories at the best level in a long time, the company is waiting to see what develops pricewise in the market. The company believes that even if prices haven't dropped when it steps back into the market it can demand improved quality and be selective in its buying. In view of possible price reductions in scrap, consumers do not wish to be caught with unduly large inventories of high-priced material.

Steel producers continue to receive scrap directly from their steel customers. Material on old orders in the open market also is flowing in well, thanks to good weather.

Chicago—Re-entry of mills into the scrap market may be marked by lower prices for some grades, dealer bundles being singled out by some interests as being so weak as to break away from the present formula differential. In the present absence of tonnage buying, prices remain unchanged on steelmaking grades of dealer origin. Railroad scrap, however, is easier, No. 1 railroad heavy melting reported off $1 to $44-45, rails 18-in. and under $2 lower to $62-63, and specialties off $1 to $51-52. Further easing is expected to develop in re-rolling rails, the lower range having already dropped $1. Farm scrap continues to flow in volume although last week brought the first sign of slackening as winter moved into the Midwest.

Buffalo—Despite yearend uncertainties a steady price tone prevailed in the scrap market here last week. Buying interests waned over the holiday period. Reports of an easier tone in the No. 1 heavy melting market were offset by business at the outside figure of the prevailing range of $48 to $49. An easier tone also was reported in the cast market, but prices were unchanged at recently reduced levels. With Pittsburgh buying falling off, downstate material was again moving into the Buffalo area. While the Pennsylvania Railroad omitted No. 1 railroad heavy melting from its list, the trade here reports that this item changed hands at $50 in the Central's list.

Cincinnati—Scrap market is dull due to holiday influences. Material is coming out more slowly, but is being taken readily even though melters have satisfactory stocks. Many foundries are not buying; despite this, prices are holding fairly well. Recent bids on railroad offerings were slightly lower, and the general undertone appears less firm.

St. Louis—Cast scrap prices are softening under the combination of declining foundry operations and improving pig iron supplies. No. 1 cupola is down $1 to $2, with other grades moving with difficulty at posted prices. Formula prices on melting steel are being maintained, but mills generally have dropped out of the market pending determination of January prices. Most inventories are above 45 days, or at least sufficient to carry through the closed winter season if normal winter shipments continue. Meanwhile, melters are moving to eliminate poor quality scrap and are rejecting many shipments.

Rails, Cars . . .

Track Material Prices, Page 101

New York—With the large list for the New York Central still pending (a maximum of 7000 cars), the leading award reported in the east recently involves 500 fifty-ton hopper cars for the Reading to Bethlehem Steel Co., for construction at the Johnstown, Pa., plant.

The New York Central has placed orders for diesel-electric locomotives, costing more than $18 million. The locomotives will be built by Electro-Motive Division of General Motors Corp., American Locomotive Co., Fairbanks, Morse & Co., and Lima-Hamilton Corp. Orders include about $3,300,000 of equipment for the Indiana Harbor Belt Railroad and $960,000 of equipment for the Pittsburgh & Lake Erie, both New York Central affiliates.

Denver — Colorado Fuel & Iron Corp. has increased the base price of heavy rails to $3.50 per 100 pounds, f.o.b. Minnequa, Colo., effective as of Nov. 22. The company previously quoted $3.35 per 100 pounds on this product.

Boston—Rail requirements for New England railroads are heavier this year. Among contracts being placed is one for close to 6000 tons by Bangor & Aroostook. Track replacement programs were curtailed from early estimates in 1948 due to heavy outlay for snow removal, reducing funds earmarked for rails. Much of the postponed work is scheduled for 1949. Bethlehem Steel Co. has the Bangor & Aroostook tonnage.

Plans $20 Million Building

New York — A $20 million, 36-story, fully air-conditioned building will be built in the Grand Central Terminal area on the site of the old Murray Hill Hotel in this city. It will be the first skyscraper to be built in the Grand Central area since the early 1930's. George A. Fuller Co. has been awarded the general construction contract. Excavation work for the structure, which is being undertaken by 100 Park Avenue Inc., has been started and completion is scheduled for early 1950.

Canada . . .

Toronto, Ont. — According to government experts in Ottawa, Canada will establish a new all-time record in steel production in 1948, estimated at 3,100,000 net tons of ingots. Last year Canada produced 2,854,000 tons of ingots; before the war 1,500,000 tons of ingots was a good year.

In addition to its own production, Canada in 1948 will have imported 900,000 tons of finished rolling mill products from the United States, which represents a decline of about 40,000 tons from the 1947 total. Government experts are unable to present as encouraging a picture for 1949 as for the current year. The country probably will have somewhat less steel in 1949 than this year and about as much as there was in 1947. Heavy defense requirements in the coming year will cut seriously into the quantity of steel plates going to producers of peacetime products and capital equipment. Plates, an official said, are the key to the entire steel shortage, since they are never used for nonessential purposes and are already scarce.

About 70 per cent of the country's monthly production of 21,000 tons of steel plates are allocated by the federal government's steel controller. The remaining 30 per cent goes to essential users without government allocation.

Canadian steel imports from the United States for the first quarter of 1949 are expected to be set at 200,000 tons, the same level as for the last quarter this year. To date, Canada has placed only structural steels under formal import control. Quotas have been given importations of main groups in short supply within the 200,000-ton allocation, but only in the case of structurals was the specific allocation of 35,000 tons put under import control. The same situation is expected to prevail in the first three months of next year.

Imports of United States steel into Canada in the first quarter of 1947 and 1948 were approximately 240,000 tons. This means for 1949 a cutback of 40,000 tons, or about 16 per cent, from what was obtained in the two previous years. It is further pointed out that with the shortage of steel as it is across the line, the figure of 200,000 tons for the quarter is about the maximum which could have been obtained without control.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

330 tons, Public Roads Administration overpass, Columbia river highway, to Bethlehem Pacific Coast Steel Corp., Seattle; general contract to Valley Construction Co., $326,318.

250 tons, Lynbrook Telephone building, Remsen & Washington Aves., Lynbrook, Long Island, to Grand Iron Works, New York.

155 tons, nurses' home, Essex county hospital, Massachusetts, to Groisser & Shlager Iron Works, Somerville, Mass.

Unstated, six siphon breakers for Grand Coulee dam, to Valley Iron Works, Yakima, Wash.

STRUCTURAL STEEL PENDING

2500 tons, galvanized steel transmission towers, Bonneville Power Administration; American Bridge Co., Pittsburgh, -low, $618,746.

1800 tons, galvanized steel transmission towers, Bonneville Power Administration; Bethlehem Pacific Coast Steel Corp., San Francisco, low, $445,900.

500 tons, power plant, Standard Oil Co. of New Jersey, Bayonne, N. J.; plans expected out shortly through Day & Zimmerman, Philadelphia.

400 tons, approximately, two transportation sheds to Port Newark, N. J., for the Port Authority of New York; bids asked.

400 tons, auditorium-gym, Thornton Township high school, Ill.; bids asked.

290 tons, sheet piling, dam, Henry county, Ill.; bids asked.

200 tons, towers, racks, pedestals, four substations; bids to Bonneville Power Administration, Portland, Oreg., Dec. 30; spec. No. 4438.

175 tons, public school No. 93, West End Ave., between 95th and 96th Sts., Manhattan, N. Y.; Caristo Construction Co. awarded general contract.

150 tons, Du Pont power house addition, Belle, W. Va.; bids asked.

150 tons, building, Libertyville, Ill., for Illi-

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KRANE KAR handles steel stock and forms of any shape or size within capacity (or scrap when equipped with magnet); transmission cases, motors, crankcases, transformers, etc. Works in tight quarters, low headroom, up and down ramps . . . anywhere, in plant or yard. Often cuts handling costs to 8¢ a ton.

Safest Crane in its class, minimizing injury risks to men, materials, machine. ***Self-Stabilizing:*** dangerous use of jacks or stabilizers eliminated. ***Automatic Power Cut-Off*** at extreme positions of Boom-Swing or Topping. ***Automatic Braking*** of Load and Boom Lines. ***No Tail-Swing:*** no part of Crane passes over operator's head.

Gas or Diesel. 9 to 37 ft. booms or adjustable telescopic booms; Electric magnet, clamshell bucket, and other accessories available. Ask for illustrated bulletin #79.

USERS: General Motors, Bethlehem Steel, Boeing, Pullman-Standard, Lima Locomotive, Carnegie-Illinois, U. S. Steel, Basic Magnesium, etc.

KRANE KAR *will transport any load it can lift—at sides as well as at front.*

THE ORIGINAL SWING-BOOM MOBILE CRANE WITH FRONT-WHEEL DRIVE AND REAR-WHEEL STEER

1¼, 2½, 5, AND 10 TON CAPACITIES

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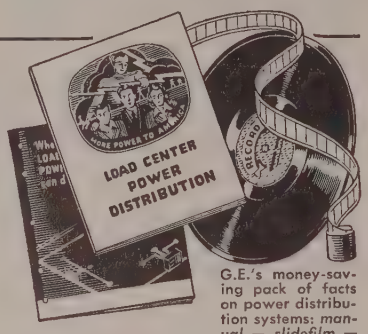

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Name_____ Title_____

Company_____

Street_____

City_____

GENERAL ELECTRIC

nois Bell Tellephone Co.; bids asked.

Unstated, dam, spillway, control house and other facilities, Washington state Deschutes Basin project; Scheumann & Johnson, Seattle, low, $930,930.

Unstated tonnage, Cross-Bronx Expressway, New York; bids to be taken by the state highway department, Jan. 12.

REINFORCING BARS . . .

REINFORCING BARS PLACED

650 tons, Bon Marche suburban store, Seattle, to Bethlehem Pacific Coast Steel Co., San Francisco; Howard S. Wright & Co., general contract.

350 tons, district government, Washington, to Bethlehem Steel Co.

105 tons, headquarters building, 26th Division, Boston, to Northern Steel Co., Boston.

REINFORCING BARS PENDING

21,000 tons, outlet work, Ft. Randall dam, South Dakota; bids in to U. S. Engineers, Omaha, Nebr., Dec. 17; previously reported as 2100 tons.

1275 tons, mat reinforcement, Highway Department, Connecticut, Truscon Steel Co., Youngstown, O., low.

600 tons, supplementary military construction in Alaska; general bids in.

365 tons, substructure, Manasquan river, Route 35, Brielle-Point Pleasant Beach, N. J..; bids Jan. 6, state highway commissioner, Trenton.

270 tons, psychiatric building, Michael Reese Hospital, Chicago; bids rejected.

230 tons, Navy, East and West yard; Truscon Steel Co., Youngstown, low, inv. 7401.

Unstated, viaduct, bridge and overpass on Edens Parkway development, Chicago; Thomas McQueen Co., Forest Park, Ill., contractor.

Unstated, five-story wing addition, St. Joseph's hospital Aberdeen, Wash.; Strand & Sons, Seattle, low general contract, $1,473,672.

PLATES . . .

PLATES PENDING

100 tons, 100,000-gallon elevated steel tank, Tracy pumping plant, Central Valley project, Calif.; bids Jan. 5, Bureau of Reclamation, Antioch, Calif.

100 tons, steel water tank and tower, veterans hospital, San Diego, Calif.; Chicago Bridge & Iron Co., Chicago, low $117,450.

Unstated, bulk asphalt storage tanks Anchorage and Fairbanks, Alaska; Birch & Sons and Morrison-Knudsen Co., joint low to Alaska Road Commission, $1,283,444.

Unstated tonnage, two single screw, 125-foot steel lightships, U. S. Coast Guard, Washington; bids postponed to Jan. 5 from Dec. 27.

PIPE . . .

CAST IRON PIPE PENDING

240 tons, cast iron or alternatives; bids to Sunnyside, Wash., Jan. 3.

Unstated, 15,800 feet, 4 to 10-inch Class 150, cast iron or alternatives, also 500,000-gallon steel storage tank; bids to Harry F. Ehmer, city clerk, Grandview, Wash., Jan. 4.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Chicago, Indianapolis & Louisville, five diesel-electric locomotives, to Electro-Motive Division, General Motors Corp., La Grange, Ill.; three will be of 1500-horsepower and two of 600-horsepower.

RAILROAD CARS PLACED

Reading Co., 500 fifty-ton hopper cars, to the Johnstown, Pa., plant of the Bethlehem Steel Co.

RAILS PENDING

Corps of Engineers, Kansas, Mo., 3130 tons rail, 126,500 tie plates, and other accessories; bids Dec. 26, inv. 126.

CONSTRUCTION AND ENTERPRISE

CALIFORNIA

SAN FRANCISCO—Pacific Gas & Electric Co., 245 Market St., has awarded a $1 million contract to Bechtel Corp., 220 Montgomery St., for construction of a power house.

CONNECTICUT

SEYMOUR, CONN.—Seymour Mfg. Co. Inc., 15 Franklin St., is planning to build a $150,000 factory; Fletcher Thompson Inc., 211 State St., Bridgeport, architect.

FLORIDA

AUBURNDALE, FLA.—Wm. P. McDonald Corp., c/o contractor, has awarded a $350,000 contract to Albert Haworth, 628 Raymond Ave., Tampa, for erection of a fruit juice manufacturing plant.

ILLINOIS

CHICAGO—Central Steel & Wire Co., 3000 W. 51 St., has awarded a contract to Sumner S. Sollitt Co., 307 N. Michigan St., for the masonry and carpentry work in its factory addition and a contract to Marcus Weil & Sons, 209 E. Superior St., for the plumbing.

CHICAGO—F. W. Woolworth Co., Woolworth Bldg., New York, has awarded a $2 million contract to Turner Construction Co., 420 Lexington Ave., New York, for erection of a warehouse. E. F. Quinn, 134 N. LaSalle St., architect; A. D. Crosett, 27 William St., New York, engineer.

INDIANA

LAWRENCEBURG, IND.—Indiana & Michigan Electric Co., c/o American Gas & Electric Co., 30 Church St., New York, has awarded a $2 million contract to George F. Hazelwood Co., Cumberland, Md., for construction of a Tanner Creek Plant power station; H. A. Kammer, chief, Design & Construction Division, American Gas & Electric, engineer.

WHITING, IND.—Carbide & Carbon Chemicals Corp., 30 E. 42 St., New York, has awarded a $2 million contract to Day & Zimmerman Inc., Packard Bldg., Philadelphia, for construction of a steam generating and power plant.

IOWA

HUMBOLDT, IOWA—Corn Belt Co-operative has awarded a $120,000 contract for electrical work for its power plant extension to Schneider Electric Works, 1108 Farnam St., Omaha, Nebr., and a $315,000 contract for the mechanical work to Moffett & Troop, 4 Smithfield St., Pittsburgh.

WATERLOO, IOWA—Rath Packing Co. has awarded a $365,000 contract to Wildes Construction Co. for an addition to its packing plant.

MARYLAND

VIENNA, MD.—Eastern Shore Public Service Co. of Maryland, 1147 Division St., Salisbury, has awarded separate contracts totaling $5 million for the erection of a power plant; United Engineers & Constructors Inc., 1401 Arch St., Philadelphia, engineers.

MISSISSIPPI

JACKSON, MISS.—Mississippi Chemical Corp., c/o J. Sharpe Williams, chairman of the board of directors, Yazoo City, is planning to build a $1 million nitrogen plant.

MISSOURI

KANSAS CITY, MO.—International Harvester Co., Frank W. Jenks and T. B. Hale, vice presidents, is planning to construct an $8 million plant to be used as a wholesale

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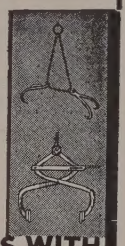

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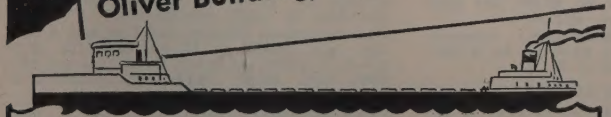

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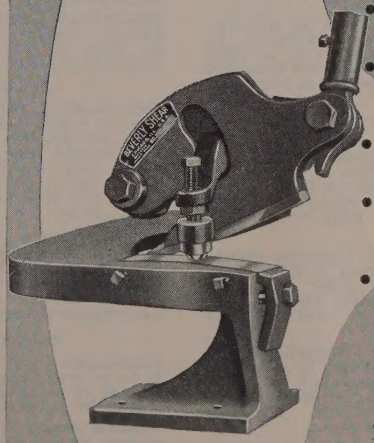

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OHIO

BARBERTON, O.—Columbia Chemical Div., Pittsburgh Plate Glass Co., has awarded a $500,000 contract to Heller-Murray Co., 222 Rayen Ave W., Youngstown, for construction for a laboratory including a bridge and installing a coal handling system.

SOUTH POINT, O.—Solvay Process Div., Allied Chemical & Dye Co., 61 Broadway, will build a $3 million plant.

TEXAS

DALLAS, TEX.—Dallas Power & Light Co., c/o Dallas Power & Light Bldg., plans to build a $8,300,000 electric generating plant.

DALLAS, TEX.—Eastman Kodak, 343 State St., Rochester, N. Y., is planning to build a $1 million plant; plans by Thomas, Jameson & Merrill, 820 N. Harwood St.

PORT LAVACA, TEX.—Aluminum Co. of America has awarded a $9,500,000 contract to Consolidated Western Constructors Inc., 5201 Fannin St., Houston, for erection of an aluminum manufacturing plant, including pot rooms, administration building, engine houses, cafeteria, store building and other structures.

CANADA

BROCKVILLE, ONT.—Orient Hosiery Ltd., Canada Silk Products Corp., Sherbrooke, Que., has awarded a $2 million contract to Anglin Norcross (Ontario) Ltd., 57 Bloor St. W., Toronto, for construction of a plant.

LINDSAY, ONT.—Visking Corp., 6733 W. 65 St., Chicago, has awarded a $1 million contract to A. W. Robertson Ltd., 57 Bloor St., Toronto, for construction of a plant; A. C. Facey, 991 Bay St., Toronto, architect; E. A. Cross, 991 Bay St., Toronto, engineer.

PEMBROKE, ONT.—Canadian Veneers Ltd., K. C. Irving, 120 Mt. Pleasant Rd., has awarded a $300,000 contract to Foundation Co. of Canada Ltd., 1900 Sherbrooke St. W., Montreal, Que., for construction of a factory.

ST. CATHERINES, ONT.—Welland Vale Mfg. Co., 50 Welland St. has awarded a $300,000 contract to Newman Bros., 127 St. Paul St., for construction of a plant; Wiley & Spencer, 32 William St., architects.

TORONTO, ONT.—J. T. Hepburn Ltd., 914 Dupont St., has awarded a $150,000 contract to Dickie Construction Co. Ltd., 17 Yorkville St., for erection of a shop.

TORONTO, ONT.—Canadian Wirebound Boxes Ltd., 1000 Gerrard St., has awarded a $105,000 contract to James Bodie Construction Co. Ltd., 456 Pope St., for a boiler house; W. T. Brickenden, 85 W. Richmond St., engineer.

MONTREAL, QUE.—Canadian National Railroad, B. Wheelwright, chief engineer, 360 McGill St., has awarded a $200,000 contract to R. & B. A. Ryan Ltd., 1803 William St., for construction of a shop; G. F. Drummond, 355 McGill St., engineer.

MONTREAL, QUE.—S. Silver Co. Ltd., 416 McGill St., has awarded a $250,000 contract to M. Luchuk, 764 Twelfth Ave., for construction of a factory; M. M. Kalman, 1200 Staletander St., architect; L. S. Backler, 1250 McGill College Ave., engineer.

MONTREAL, QUE.—Canadian National Railroad, B. Wheelwright, chief engineer, 360 McGill St., has awarded two contracts, $200,000 and $110,000, to Pentagon Construction Co. Ltd., 1225 Bishop St., for construction of a steam generation plant and pipe duct, respectively.

MONTREAL, QUE.—D'Alliards Ltd., 907 St. Catherine St., has awarded a $280,000 contract to Ross & Anglin Ltd., 4400 St. Catherine St., for erection of a factory; Luke, Little & Mace, 1410 Guy St., architects.

PRICES OF LEADING FERROALLOYS PRODUCTS

(*Continued from Page* 103)

packed 12.1c, ton lot 13.55c, less ton 15.2c. Delivered. Spot, add 1.25c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 13.0c per lb of contained Si, carload packed 14.3c, ton lot 15.45c, less ton 16.7c. Delivered. Spot, add 0.8c.

80-90% Ferrosilicon: Contract, carload, lump, bulk 14.65-15c per lb of contained Si, carload packed 15.9c, ton lot 16.9c, less ton 18.05c. Delivered. Spot, add 0.25c.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max.). Add 0.7c to 85% ferrosilicon prices.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 16.5c per lb of contained Si, carload packed 17.7c, ton lot 18.65c, less ton 19.7c. Delivered. Spot, add 0.25c.

Low-Aluminum 90-95% Ferrosilicon: (Al 0.50% max.) Add 0.7c to above 90-95% ferrosilicon prices.

Silicon Metal: (Min. 97% Si and 1% max. Fe.). C.l., lump, bulk, regular 19.0c per lb of Si c.l. packed 20.2c, ton lot 21.1c, less ton 22.1c. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade analyzing min. 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 8.40c per lb of alloy, packed c.l. 9.20c, ton lots 9.30c, 200 to 1000 lb 9.65c, less 200 lb 10.15c per lb of alloy. Delivered. Spot up 0.5c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3⅜ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 13.75c per lb of briquet, carload packed 14.45c, ton lot 15.25c, less ton 16.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk, 10.00c per lb of briquet, c.l. packaged 10.8c, ton lot 11.6c, less ton 12.5c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 10.0c, per lb of briquet, c.l. packed 10.8c, ton lot 11.6c, less ton 12.5c. Delivered. Add 0.25c for notching. Spot, add 0.65c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 5.75c per lb of briquet, c.l. packed 6.55c, ton lot 7.35c, less ton 8.25c. Delivered. Spot, add 0.25c.

(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 5.90c, c.l. packed 6.70c, ton lots 7.50c, less ton 8.40c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) 80.00c per pound of Mo contained. f.o.b. Langeloth, Pa.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18%, and Si 53-59%). Contract, carload, lump, bulk 19.25c per lb of alloy, carload packed 20.05c, ton lot 21.55c less ton 22.55c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 17.9c per lb of alloy, carload packed 19.1c, ton lot 21.0c, less ton 22.5c. Delivered. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max., Si 4% max., C 0.10% max.). Contract, ton lots, 2" x D, $1.40 per lb of contained Ti; less ton $1.45. (Ti 38-43%, Al 8% max., Si 4% max., C 0.10% max.). Ton lot $1.28, less ton $1.35. F.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot add 5c.

Ferrotitanium, High-Carbon (Ti 15-18%, C 6-8%). Contract, $160 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destination east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21% C 3-4.5%). Contract, $175 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

VANADIUM ALLOYS

Ferrovanadium: Open Hearth Grade (Va 35-55%, Si 8-12% max., C 3-3.5% max.). Contract, any quantity, $2.90 per lb of contained Va. Delivered. Spot, add 10c. **Crucible-Special Grades** (Va 35-55%, Si 3.25-4% max., C 0.5-1% max.), $3. **Primos and High Speed Grades** (Va 35-55%, Si 1.50% max., C 0.20% max.), $3.10.

Vanadium Oxide: Contract, less carload lots, $1.20 per lb of contained V_2O_5, f.o.b. Bridgeville, Pa. Spot, add 5c.

Grainal: Vanadium Grainal No. 1, 93c; No. 6, 63c; No. 79, 45c; all f.o.b. Bridgeville, Pa., usual freight allowance.

TUNGSTEN ALLOYS

Ferrotungsten: (W 70-80%). Contract, 10,000 lb W or more, $2.25 per lb of contained W; 2000 lb W to 10,000 lb W, $2.35; less than 2000 lb W, $2.47. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Contract or spot, 1000 lb or more, $2.90 per lb of contained W; less than 1000 lb W, $3.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloys: (Zr 12-15%, Si 39-43%, Fe 40-45%, C 0.20% max.). Contract, c.l., lump, bulk 6.6c per lb of alloy, c.l. packed 7.35c, ton lot 8.1c, less ton 8.95c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered. Spot, add 5c.

Borosil: (3 to 4% B, 40 to 45% Si), $6.25 per lb contained B, f.o.b. Philo, O., freight not exceeding St. Louis rate allowed.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 0.90 to 1.15%). Net ton to carload, 8c per lb, f.o.b. Suspension Bridge N. Y., freight allowed same as high-carbon ferrotitanium.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Mn 5% max. Si 8% max., C 0.5% max.). Contract, ton lot, 2" x D, $2.75 per lb of contained Cb, less ton $2.80. Delivered. Spot, add 25c.

CMSZ Mixes: (No. 4—Cr 45-49%, Mn 4-6%, Si 18-21%, Zr 1.25-1.75%, C 3-4.5%; No. 5—Cr 50-56%, Mn 4-6%, Si 13.50-16.0%, Zr 0.75-1.25%, C 3.50-5%). Carload, 12 M x D, carload packed 19.0c per lb of material, ton lot 19.75c, less ton 21.0c. Delivered.

Silcaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, Boron 0.55-0.75%). Carload, packed, 1" x D, 43c per lb of alloy, ton lot 45c, less ton 47c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx.). Contract, carload, packed, ⅛" x 12 M, 16.5c per lb of alloy, ton lots 17.25c, less ton 18.5c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 16.50-17.00c per lb of alloy; ton lots 17.90-18.00c; less ton lots 19.40-19.50, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 14.25c per lb of alloy; tons lots 15.75c; less ton lots 17.00c, f.o.b., Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al). Packed, lump, carload 11c, ton lots 11.25c, smaller lots 11.75c per lb alloy; freight not exceeding St. Louis rate allowed.

Ferrophosphorus (23-25% based on 24% P content with unitage of $2 for each 1% of P above or below the base): Gross tons per carload, f.o.b. sellers' works, Mt. Pleasant, or Siglo, Tenn.; $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo, f.o.b. Langeloth and Washington, Pa., furnace, any quantity 95.00c. Effective Jan. 1, 1949, price will be $1.10 Langeloth.

Technical Molybdic-Oxide: Per lb, contained Mo, f.o.b. Langeloth, Pa., packed in bags containing 20 lb of molybdenum, 80.00c.